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Figure 1 A+B

A

ATGTTTTCTC CTGTAGTCGT CAGTGTGGTA TTCACAATCG CCTTCTGCAA
TGCGTCTCCA GCAAGAGACA GCTTCGGCTG CTCTAACAGT GGGATAACTG
ACAGCGACCG GCAAGCGTTC CTCGACTTCC ACAACAATGC TCGTCGACGG
GTTGCGAAAG GCCTTGAGGA TAGCAACTCC GGCAAACTGA ATCCAGCGAA
GAACATGTAC AAGCTGTCAT GGGACTGTGC AATGGAACAG CAGCTTCAGG
ATGCCATCCA GTCATGCCCA AGCGGCTTTG CTGGGATTCA AGGTGTTGCG
CAGAATACAA TGAGCTGGTC AAGCTCTGGT GGATACCCCG ATCCATCGGT
AAAGATAGAA CCAACGCTCT CCGGCTGGTG GAGTGGTGCG AAAAAGAACG
GCGTAGGCCC GGACAACAAA TACACCGGTG GTGGTCTCTT CGCCTTCTCT
AACATGGTAT ACTCCGAAAC GACGAAACTT GGCTGCGCTT ACAAGGTTTG
CGGCACTAAA CTGGCGGTTT CATGCATCTA TAATGGAGTC GGGTACATCA
CAAATCAACC TATGTGGGAG ACAGGTCAGG CTTGCCAGAC AGGAGCAGAC
TGCTCCACTT ACAAGAACTC AGGCTGCGAG GACGGCCTTT GCACGAAGGG
ACCAGATGTA CCAGAAACAA ACCAGCAGTG CCCCTCAAAC ACCGGAATGA
CTGATTCAGT CAGAGATACT TTCCTATCGG TGCACAATGA GTTCAGATCG
AGTGTTGCCC GAGGTCTGGA ACCCGACGCT CTGGGCGGAA ATGCACCAAA
AGCAGCTAAA ATGCTCAAGA TGGTGTATGA CTGTGAAGTG GAAGCATCGG
CCATCAGACA TGGAAATAAA TGCGTCTATC AACATTCTCA TGGTGAAGAC
AGACCTGGAC TAGGAGAAAA CATCTACAAA ACTAGTGTAC TCAAATTCGA
CAAGAACAAA GCAGCCAAGC AGGCTTCACA ACTCTGGTGG AATGAGTTAA
AAGAGTACGG CGTCGGCCCA TCCAACGTCC TTACCACTGC GTTATGGAAT
AGACCCAACA TGCAGATTGG TCGCTACACC CAGATGGCAT GGGACACCAC
CTACAAACTT GGATGTGCAG TTGTTTTCTG CAATGATTTC ACATTCGGCG
TTTGTCAGTA TGGGCCAGGA GGCAATTACA TGGGTCATGT CATCTACACT
ATGGGCCAGC CGTGCTCTCA GTGTTCGCCT GGTGCTACTT GCAGCGTGAT
CGAAGGCTTG TGCAGCGCTC CTTAATCAG TCAACAATAA ATATCTTA
CAGTGATGTT GTTGCTTACA AATTGCTTGT TTTCCAATAG AAATACCAAT
GTCAACATCA CGAGTTTCTT TAAATTCATC ACTTCCACTA CTAGGGGTGA
TTTGAATAAA ATTTCATTTC ATAAAGCAAT TACATCCGCA AAAAAAAAAA
AAAA

B

MFSPVVVSVVFTIAFCNASPARDSPGCSNSGITDSDRQAFLDFHNNARRRVA
KGLEDSNSGKLNFAKNMYKLSWDCAMEQQLQDAIQSCPSGFAGICQGVAQNTM
SWSSSGGYPDPSVKIEPTLSGWWSGAKKNGVGPDNKYTGGGLFAFSNMVYSE
TTKLGCAYKVCGTKLAVSCIYNGVGYITNQPMYETGQACQTGADCSTYKNSG
CEDGLCTKGPDVPETNQQCPSNTGMTDSVRDTFLSVHNEFRSSVARGLEPDA
LGGNAPKAAKMLKMVYDCEVEASAIRHGNKCVYQHSHGEDRPGLGENIYKTS
VLKFDKNKAAKQASQLWWNELKEYGVGPSNVLTTALWNRPNMQIGHYTQMAW
DTTYKLGCAVVFCNDFTFGVCQYGPGGNYMGHVIYTMGQPCSQCSPGATCSV

Figure 2A and B

A

GGTACTGCAGGGTTTAATTACCCAAGTTTGAGACCCAACGCCATGATTTGGCGAACGTGG
CAAGTTCTCGTGGTTCTGTATGCGGCGCTGTCCATTACAGTTGTGAACGCCTATAAACAC
ATTAGCTCCGATCACGTTGTAAATACAACACTGGGTCAGATTCGAGGAGTACCACAGAAT
TTCGAAGGCAAAAAAGTTACCGCTTTTCTTGGTGTGCCATATGGTCAACCACCGACTGGG
GAACTACGATTCAGCAATCCGAAAATGGTGCAGCGTTGGGAAGGTATAAAGAATGCTACA
ACACCGGCTCAGCCATGCTTCCACTTCCCTGACAGTAAATTTAAGGGATTTCGTGGGTCA
GAGATGTGGAATCCGAAAGGAAATATGACCGAGGATTGCTTGAATATGAATATCTGGGTC
CCACACGATGCTGATGGTTCCGTGATTGTATGGATTTTCGGAGGCGGCTTCTTCACCGGT
TCACCATCTTTAGATGTTTACAACGGTACTGCTCTAGCAGCCAAGAAACGTACCATTGTT
GTGAACATAAACTATCGATTGGGTCCCTTCGGTTTCCTTTATCTCGGTGATGATTCTCGT
GCACAAGGGAATATGGGACTGCAAGATCAACAAGTTGCATTGCGATGGGTGCATAAACAT
ATAAGCTCCTTTGGTGGAGATCCGAGAAAAGTCACTCTTTTCGGCGAAGCATCAGGCGCT
GCTTCAGCAACCGCTCATCTAGCAGCACCGGGAAGCTATGAGTTTTTCGATAAGATAATT
GGCAACGGTGGCACAATCATGAATAGTTGGGCCAGTCGAACAAATACATCGATGCTTGAG
CTGTCAATGAAACTTGCTGAACGGTTGAACTGTACCAAGAAAAGAAAAGACCCGAATACT
GTACATCGCTGTTTGGTTAAACATCCAGCACATGTGGTTCTAAAAGAGGCCGCTGTTGTG
TCGTATCAAATTGGTCTCGTGCTGACGTTTGCCTTCATACCCATTACCTCTGATAAGAAC
TTCTTCCAGGGAAATGTCTTTGATCGTCTACGAGATAAAGACATTAAGAAGAATGTATCC
ATTGTGCTTGGTACTGTAAAAGACGAAGCAACCTTCTTTTTACCCTACTACTTTGGTCAC
AACGGTTTCTCTTTCAATAACTCATTCTTAGCAGATGGGGAAGAAAACAGAGCACTCATA
AATATATCACAGTATAATTATGCGATGAATGCAACTGCGCCATCACTTGAAAGCTCACTG
GAACCACTTTTAGAAGCTTATAAGAACGTTTCGACGCGAAAAGAAGAAGGTGAAAGATTA
CGCGATGGTGTTGGTCGATTCATGGGCGACTACTTcTAtACCTGCAGCGTCATTGATTTC
GCTAATATCGTCTCAGACATTATTAATGGATCTTTGTATATGTATTACTTTACTAAgAGG
TCAGTGGCAAATCCTTGGCCAGAGTGGATGGGTGTAATGCATGGTTATGAAATAGAATAC
GAATTTGGACAGCCTTTCCTAAATTCATCaCTGTACAAGGAAAAGCTTGAAAACGAAAAG
ATcTTCTCGAAAAATATCATGAGCTTTTGGAAAGATTTCATCAAGACTGGtGTCCCTGTC
GATTTTGGCCGAAATACGATCGAAAGGAGCGGAAAGCGCTCGTACTTGGCGAGGAAAGC
GTGAACAATTCTTACCCTAATATGACTAATGTTCATGGaCCGIACTGTGAACTGATCGAA
GAAGCAAAGGbGTCTACAAATAATGGACTCaCCTTGAAGAAATACATTGAAGGGGAGATA
AAAAATAACGAAACGAACGTACTTTGATAGAATGATTTTGCaCAGAATGAAGAATTGAAT
ATCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

B

MKNPTNQVLVVLYAALSITVVNAYKHISSDHVVNTTLGQIRGVPQNFEGKKVTAFLGVPY
GQPPTGELRFSNPKMVQRWEGIKNATTPAQPCFHFPDSKFKGFRGSEMWNPKGNMTEDCL
NMNIWVPHDADGSVIVWIFGGGFFTGSPSLDVYNGTALAAKERTIVVNINYRLGPFGFLY
LGDDSRAQGNWGLQDQQVALRWVHKHISSFGGDPRKVTLFGESAGAASATAHLAAPGSYE
FFDKIIGNGGTIMNSWASRTNTSMLELSNKLAERLNCTKKRKDPNTVHRCLVKHPAHVVL
KEAAVVSYQIGLVLTFAFIPITSDKNFFQGNVFDRLRDKDIKKNVSIVLGTVKDEATFFL
PYYFGHNGFSFNNSFLADGEENRALINISQYNYAMNATAPSLESSLEPLLEAYKNVSTRK
EEGERLRDGVGRFMGDYFYTCSVIDFAMIVSDIINGSLYMYYFTKPSVANPWPEWMGVNH
GYEIEYEFGQPFLNSSLYKEKLENEKIFSKNIMSFWKDFIKTGVPVDFWPKYDAKERKAL
VLGEESVNNSYPNMTNVHGPYCELIEEAKASTNNGLTLKKYIEGEIKNNETNVF

Figure 3A and B

A

CTCGTGCCGAATTCGGCACGAGCTCCATTCATCATGCAGCGATCATTCCTACTTCTACTTGTTGTGTTAGC
AGGTGCCTGGGCCGTAAACACAACAATCCCTCTGAAGCTGATGGGAGGTTTTACACCTATGAAATATCAA
TGTGTTGGTAGAGTTTCGGACATTTGGGCGGATGTGCTATTTCTGATCGAATCATCCGATATGATTACAA
AATCAGGATTCCGTCAAGTCATCGCATTCATTACGGCGACGACAAAGAAGATGACAATCGGTCAGGATGA
AAAGCAGACACGAGTTGGGTTCATCACATACGGGGAAGAAGCAAAACTAATCTACGATCTAGATCACTGG
AGGTCAACCGAGAAGCTCAGCGATTTAGTGCAAAAAATCCCATACGTAAAATCCTCTGGAACAAATATTG
CAGCAGCAATTGCGCTGGCTAACAAGGTATTCAACTCACCAACACATCGACCGAACGTCCCGAAAGTGAT
GGTTATTGTCGCTAATGGATTGAAGAAAGGTAGTCAGAATCCGATTCCCGTTGCGACCGCATTCAAGGAC
TTTGGAGGTATTATAATAACAATAGAATACACTCAATACGATAACATTCAAGTGCCAATTTTGAAGAAAAT
TGCTAGCGAAGGATACAATATTAGAAGCAATGACGAAGATTTCAGTGTCAGAACGTTAACGAACATGTTG
TTGCAGGCAAATTGTTTCTGTCCAGACCATTACGTTCCATTTCGTGTAAATAACCCTGAATTTGGTTGTTT
CGTAACTGCAAAAATTCCATCAATGTGGAGGGATGCAGCTGAAATGTGCCGCGCCGTTGAGGAAGGGAA
ATTAGTGAAAGTAGAGAATGAGGAAAAAGCTGCATTCATCATGAAATTGGTGGGACCG
AAAAAGGAAGCATGGATTGGATTGAGGTACTATGGGAACAAATTCCAGTGGACAGATGGCACTAAGCTCA
ATGCAGACGACTTCAACCTGTGGCCCGAAGATATAAAAGAATTGAATGGACCTCATTGTGTATCTATGTA
CCAAGATCAGAAGGACAAAAAGTATTATTGGAGAGCCGGTAAATGCCTTGAAGATATGAGATATGTATGC
GAAGTACAGCCATGCAGTGCATCCAACTACTGCTCGGAACCAGTGTTCATGTATCGTCAGAAGCATCGCG
CTCTCCTACCAGCACCACCACCACCACCAAACTAAGATCTAAAAAAATCTGTCCAAAAGAGATACCATTGA
CATGTACTTTGATTATGTTGAATAGTGTAATTAATCAGAATGGGGTGTAGTGAATAAACGTACAACTATTT
AAAAAAAAAAAAAAAAAAAAAA

B

MQRSFLLLLVVLAGANAVNTTIPLKLMGGFTPMKYQCVGRVSDIMADVLFLIESSDMITKSG
FRQVIAFITATTKKMTIGQDEKQTRVGFITYGEEAKLIYDLDHWRSTEKLSDLVQKIPYVKS
SGTNIAAAIALANKVFNSPTHRPMVPKVMVIVANGLKKGSQNPIPVATAFKDFGGIIITTEY
TQYDNIQVPILKKIAGEGYIERSNDEDFSVRTLTNNLLQANCFCPDHYVPFRVNNPEFGCFV
TAKIPSMWRDAAENCRAVEEGKLVKVENEEKAAFIMKLVGPKKEAWIGLRYYGNKFQWTDGT
KLNADDFNLWPEDIKELNGPRCVSMYQDQKDKKYYWRAGKCLEDMRYVCEVQPCSAGNYCSE
PVEMYRQKHRALLPAPPPPPN*

Figure 4A & B

A

ggcacgaggg gagatggctc gacttgtatt cctactcgta ctatgtactc tggctgcagc
aagcgttcat cgacgactct ttcatcaagc tcgtcgtcat gtgacatcgg tatcgctttc
gcgtcagcca acacttcgtg aacgactgat cgcaagtggc agttgggagg attaccagaa
acaacgctac cattatcgaa agaaaattct agcaaaatat gctgctaaca aagcgtcaaa
gttacaatct gcaaacgaga tcgatgaatt gctccggaac tatatggatg cacaatacta
tggtgtcatc caaattggga ctccagctca gaatttcact gtgatcttcg acacgggttc
ctcaaatcta tgggtaccgt caagaaagtg tccattctat gacattgcat gtatgcttca
tcatcgttat gactccggag cctcgtcaac ctacaaggaa gatgggcgca agatggctat
tcagtatgga actggatcta tgaaaggatt catttctaag gatattgttt gtattgctgg
aatttgcgct gaagaacaac ctttcgcgga ggctacaagt gaacctggtc ttacatttat
cgctgctaag ttigatggaa tccttggaat ggcattcccg gaaattgctg ttctcggtgt
aactcctgtc ttccatacgt tcattgaaca gaagaaagtt cctagccctg tgtttgcttt
ctggctgaat aggaatccag agtcggaaat tggaggagag attacctttg gtggtgtgga
tacccgacgt tatgttgaac caattacatg gacaccagtg acacgtcgtg gatattggca
attcaaaatg gatatggtac aaggtggttc atcgtccatt gcgtgtccga atggatgcca
agctatcgct gatactggca cttctcttat tgctggaccg aaggcacagg ttgaggcaat
ccagaaaatat atcggagcag agccgcttat gaaaggagaa tacatgattc cttgcgacaa
agtaccatcc cttcctgatg tttcgttcat catcgatggc aagacgttta cactcaaagg
ggaagattac gttctaaccg tgaaagccgc tggtaaatca atctgtttgt ctggcttcat
gggaatggac ttcccagaga agatcggcga attgtggatc cttggagatg ttttcattgg
aaaatactac accgtcttcg atgttggtca ggcacgtgtt ggatttgctc aagcaaagtc
agaagatgga ttccctgttg gcaccccccgt tcgaacattc agacagcttc aggaagacag
cgatagcgac gaggacgatg tatttacttt ttaagtagtg ttaacatctc caacgtgctc
tgttacttct acgtgtacca tgtttcacgt gtttgctcat ttgataaatt attatcttcc
ct

B

MARLVFLLVLCTLAAASVHRRLFHQARRHVTSVSLSRQPTLRER
LIASGSWEDYQKQRYHYRKKILAKYAANKASKLQSANEIDELLRNYMDAQYYGVIQIG
TPAQNFTVIFDTGSSNLWVPSRKCPFYDIACMLHHRYDSGASSTYKEDGRKMAIQYGT
GSMKGFISKDIVCIAGICAEEQPFAEATSEPGLTFIAAKFDGILGMAFPEIAVLGVTP
VFHTFIEQKKVPSPVFAFWLNRNPESEIGGEITFGGVDTRRYVEPITWTPVTRRGYWQ
FKMDMVQGGSSSIACPNGCQAIADTGTSLIAGPKAQVEAIQKYIGAEPLMKGEYMIPC
DKVPSLPDVSFIIDGKTFTLKGEDYVLTVKAAGKSICLSGFMGMDFPEKIGELWILGD
VFIGKYYTVFDVGQARVGFAQAKSEDGFPVGTPVRTFRQLQEDSDSDEDDVFTF

Figure 5A and B

A

ggcacgagag aatgcgttcg atactcgtgt tggtggctct gatcggatgc attgctgcgg
gtgtatataa aatcccattg aaaagaatca ctccgccgat gataaaaatg ttgagagctg
gtacttggga aacgtacgta gaaggaatga ggaagagaca attacagtta ctgaaggagc
acaaggttca tatccaagat gtactcggct atgctaacat ggagtacctc ggcgaaatta
ctattggaac tcctcaacag aagtttctgg tggttttgga cactggctcc tcgaatctgt
gggtccctga tgattcatgc tacaaggaga agagacctga tagatgtcta gtatcaaact
gtgatgctgg actggtttgt caagtcttct gtccagatcc taaatgctgt gaacatacga
gagaattcaa gcaagtaaac gcatgcaaag ataagcatcg atttgatcaa aagaattcca
acacttatgt taaaacaaac aaaacatggg caatagcgta tggaactgga gatgcgaggg
gatttttgg aagagataca gtccgtttgg gtgctgaagg aaaggatcag ctcgttatta
atgatacgtg gttcggacaa gcagagcata tagctgaatt tttcagtaat actttccttg
atggcattct cggactcgct tttcaagaac tgtcagaagg aggcgtcgct cctccaataa
ttcgtgccat tgaccttgga cttctcgatc aaccaatatt tactgtctat ttcgaaaatg
tcggagacaa agaaggtgtt tatggaggtg ttttcacctg gggtggtctc gatcccgatc
attgcgaaga tgaggtcaca tatgaacagc taaccgaagc aacttactgg cagtttagac
ttaaaggagt gtcgtctaag aacttctcgt cgacggctgg ttgggaagca atatccgaca
ctggtacctc gttaaatgga gcccctaggg ggatactaag aagtattgca agacagtata
atggacagta cgtcgcatct caaggtctct acgtcgtcga ctgcagtaaa aatgtgaccg
ttgacgtgac cattggcgac agaaaactaca ctatgactgc gaaaaatctc gtacttgaaa
tacaggctga tatatgtatt atggcatttt tcgaaatgga catgttcatt ggaccagcat
ggattcttgg cgatccattt attcgagaat attgcaatat tcatgacatt gaaaagaagc
ggattggttt tgcagctgta aaacattgat cgattataaa tgtaatgggc tatttgtcat
aaattgctca ataaagtttt ttgactaaaa aaaaaaaaaa aaaaaa

C

MRSILVLVALIGCIAAGVYKIPLKRITPPMIKMLRAGTWETYVE
GMRKRQLQLLKEHKVHIQDVLGYANMEYLGEITIGTPQQKFLVVLDTGSSNLWVPDDS
CYKEKRPDRCLVSNCDAGLVCQVFCPDPKCCEHTREFKQVNACKDKHRFDQKNSNTYV
KTNKTWAIAYGTGDARGFFGRDTVRLGAEGKDQLVINDTWFGQAEHIAEFFSNTFLDG
ILGLAFQELSEGGVAPPIIRAIDLGLLDQPIFTVYFENVGDKEGVYGGVFTWGGLDPD
HCEDEVTYEQLTEATYWQFRLKGVSSKNFSSTAGWEAISDTGTSLNGAPRGILRSIAR
QYNGQYVASQGLYVVDCSKNVTVDVTIGDRNYTMTAKNLVLEIQADICIMAFFEMDMF
IGPAWILGDPFIREYCNIHDIEKKRIGFAAVKH

Figure 6A & B

A

```
AGCATATCAGCATGAGAGTCGCTATTGTTTTCATTGCATGCTTCGCAGTA  50

GCACACGCATGCAAGTgCGAAAAGAAACCTCGTCCTCCATTGGAGAAACT 100

GCTTTGCCAATCACAATTTGTTACTCACGCGAAAGTGACGAAGAAGAGAA 150

TTGATGGTTACTTCATCTATTACGACTTGGAGCATAAGGaAGTTTATAAG 200

CCCAAAGATAGGAGTATCCCAATCGAACTCTTCTCATGGAGGGAAAAGGA 250

AAATTGTGGTGTTCCGGATCTCGAAGAAGGCAAAGAATACCTGATAGGAG 300

GTAAAGTGACGGATTATGGCGACGGTGATTTGGTAATTTCTGTTTCACGG 350

TGCGACCTTCTCCGAAACTGGACAGACGTCTCTGGAGAGGAGAAGAAATT 400

GCTCGGAACGTTCAAATGTGAAAATCAGTCATAAACGCCGATTATATATA 450

ATTGAaAGAAGAGAAATGAACATTTTTCACGCGAAAAAAAAAAAAAAAAA 500

AAAAAAAAA                                           559
```

B

```
                M  R  V  A  I  V  F  I  A  C  F  A  V  13
 A  H  A  C  K  C  E  K  K  P  R  P  P  L  E  K  L  30
 L  C  Q  S  Q  F  V  T  H  A  K  V  T  K  K  P     46
 I  D  G  Y  F  I  Y  Y  D  L  E  H  K  E  V  Y  K  63
 P  K  D  P  S  I  P  I  E  L  F  S  W  R  E  K  E  81
 N  C  G  V  P  D  L  E  E  G  K  E  Y  L  I  G     96
 G  K  V  T  D  Y  G  D  G  D  L  V  I  S  V  S  R 113
 D  D  L  L  P  N  W  T  D  V  S  G  E  E  K  K  L 130
 L  G  T  F  K  C  E  N  Q  S  *                   141
```

Figure 7 A and B

A

GTGGTTTTCAACGTCCTCACATGGCTTAAATTAA
ACGAGAACAAAGATGACTCATCACCGGCTCCGAAGATATGGAATGTGGGAGAGCAAGATAATACACCCGTGCTGACAAAT
TTGTTAGTTTTGGAAAAAGAGGAGTTAGCAGCAAAGTTGAAGAAAACACCATATGAGGAGGTGGATGAGCAAACAGTTAG
ACAATCGTCGGTTATGAAACTCAGGAATATCAAAAATGCCCTGTTCACTCCAATAGAACCAGTAGCCTCAGCGTTGCCTC
CATTGCGTGTGAATGACCCGAAATATTGTCCGAGTTACGGTGAACCGGATAAGAAATATGCCTATCAGGAAGCAGCATCT
TATCTTCTCAGTGGTCTGGATCAGACTGTAGATCCATGCGAGGATCTCTATGCATTCACCTGTAATACGTACCTCAGAAA
TCACAACGCCACCGACATTGGCGTGAACCGAATCGGAACGTACAAAGACGCTCAAGATGACGTGAACGCTGAAATCGTGG
AAGCACTCGAAGAAGTTAACGTGAGCGACACAAAGTGGTCGGAGACGGAGAGGCTTGTGAAAGCGACTCTCTTCACATGT
GTACACCACACTCGAGCGAGGAAACCCATAGACAATTCGAAGAACGTTCTTATAGAGATGAGAGACTTGTTTGGCGGAAT
TCCATTCCTCAATCATACTCTGAAGAAGGACATTGATTTCTTTGATATAATGGGAAAGTTCGAGCAGAATCATGCGATGG
GAACCCTTCTCGGAGCAATGGTCTCGGTCGATTTCAAGAATGTGAACAAACACTCCTTATTCTTATCGCAGCCCTATCTT
CCAATGGCTCGAGATTTCTATGTTTTCCCACAACACACAAAGATGGTTGAGAATCGCGTAAGTCTCATCAACTCTGTGCT
GAGGTCGTTCGCAGAGGCTGTTCTGGATGATCCCTCGCCGTATCTCGATCTGATGTCAAGATCGGCAAGAGATGTAGTGA
AGCTGGAGATGCAGATTGCGATGGCATCGTGGCCAGAGAGTGAACTGAGGAACTACGCACAACAGCACAATCCACGCACT
TTGAATCAGTTGAAAGCAGCGTATCCAGCGATTAAATGGGACAGTTATTTCAATGCTCTGCTCTCCTCTGTGCAGGGAGT
CGATATGAATAGGCAGAACATCATACTTACCCAACCATCGTACTTCGGCTGGTTAAATGCTCTCTTCAACGGTGGCGCAG
ATGACAAAACCATTGCGAATTATCTTCTTGTTCACCTGATTCTCGAGGAGGCTGATTTCCTTGGTGGAGCACTTAAAACG
ATGGTTCAAAAATCTGATTATGTTCCATATGCCTTAGGAAGAGGAAAGGGAGTCACAAGAGTTGGCCAGCAACTTACTCG
ATCACATGACGATACTGTTGAGGATGCAAACATACAGTGCTTGAACAGCATGATGACGTATATGCCATTTGGACCAGGTT
ACGTGTACGTGAAATCAAGGAAGAACAGACATGACGTTGTCAAGGACATAGAGCACCAGACCGAGCTGGTCTTCAAGAAC
TTTGTGAACATGATTGGTAACTTAAATTGGATGACAGACGCATCTCTGGAGCTCGCCATGGAGAAAGCTGATACGATGGT
GAAAAACTATGGATGGCCCAAGGATTTGTTTGGAAATTTCAGGGATAGTAGCAAGATTGATGCTTATCACAAGAAGGATT
ATGGTAACATCATTAACCTGTACAAGGAGAACATTACTCATAACTACTACCACATCCGCAGAACTATGATCAAAGGCTAT
TCCAACCATGAATCGCTGCGATTGCTGACTGAAGCGCCGAAAAGGCACCACTTCCTGTTGTCACCCGCTCTGGTGAATGC
GTGGTACATACCGGAGAGAAACTCCATCGCATTCCCTTACGCCTTCTGGAATCCACCCTATTACAATTACGAATATCCTC
AAGCATGCAACTACGCTGGTCAAGGTGGAACTGCTGGCCACGAATTAGTGCATGGATTCGATGACCAGGGAGTACAGTTC
GCTGCCGACGGAAGCCTTAGCGACTGCACGTGGATCGAGTGTGGATGGTTGGAAGAGAAGTCCAAGAAAGGATTCAGTGA
TATGGCACAATGTCTTGTCACACAGTATAGCACCCAATGCTGCCCTCAGACAGGTGGCGTCACCCACTGCGCTAATGGAG
CGACCACCCAAGGAGAAAACATCGCCGATCTTGGAGGTCAACTGGCAGCATATCGAGCCTACCGTGAATACATCAGCAAG
GAAAGAGGAGAGGAGGAGAAGAGACTGCCGGATTGGAGCAGTACACACCAAATCAGATCTTCTGGATAACATACGGATA
TTCGTGGTGCATGAGCCAAACAGATAGCAGTCTTATTAGACAACTCTTGACCGATGTTCACTCACCTGGCTCATGCCTTG
TTAACCAAGTCATGCAAGATATTCCGGAATTGCACTCGATTTCGGATGTACAATGGGCCAGAAGATGTATCCAGAGCCT
GAGCAACGATGTCCGGTTTGGGTAGCAGAATAAATGTTCGAAAATGGACCGTCAGATCTCATGTTTTCAACGTGAATATGA
CGCTCTTAACTGAGGTTTTTC

B

MAKLLEVTTGLVVLLGVLGVISVVFNVLTWLKLNENKDDSSPAPKIWNVG
EQDNTPVLTNLLVLEKEELAAKLKKTPYEEVDEQTVRQSSVMKLRNIKNA
LFTPIEPVASALPPLRVNDPKYCPSYGEPDKKYAYQEAASYLLSGLDQTV
DPCEDLYAFTCNTYLRNHNATDIGVNRIGTYKDAQDDVNAEIVEALEEVN
VSDIKWSETERLVKATLFTCVHHTRARKPIDNSKNVLIEMRDLFGGIPFL
NHTLKKDIDFFDIMGKFEQNHAMGTLLGAMVSVDFKNVNKHSLFLSQPYL
PMARDFYVFPQHTKMVENRVSLINSVLRSFAEAVLDDPSPYLDLMSRSAR
DVVKLEMQIAMASWPESELRNYAQQHNPRTLNQLKAAYPAIKWDSYFNAL
LSSVQGVDMNRQNIILTQPSYFGWLNALFNGGADDKTIANYLLVHLILEE
ADFLGGALKTMVQKSDYVPYALGRGKGVTRVGQQLTRSHDDTVEDANIQC
LNSMMTYMPFGPGYVYVKSRKNRDDVVKDIEHQTELVFKNFVNMIGNLNW
MTDASLELAMEKADTMVKNYGWPKDLFGNFRDSSKIDAYHKKDYGNIINL
YKENITHNYYHIRRTMIKGYSNHESLRLLTEAPKRDHFLLSPALVNAWYI
PERNSIAFPYAFWNPPYYNYEYPQACNYAGQGGTAGHELVHGFDDQGVQF
AADGSLSDCTWIECGWLEEKSKKGFSDMAQCVVTQYSTQCCPQTGGVTHC
ANGATTQGENIADLGGQLAAYRAYREYITKERGEEEKRLPGLEQYTPNQI
FWITYGYSWCMSQTDSSLIRQLLTDVHSPGSCRVNQVMQDIPEFALDFGC
TMGQKMYPEPEQRCPVWVAE*

Figure 8 A and B

A

GGGTTTAATTACCCAAGTTTGAGGATGAGGGTACTCCTGTTACTGCTACTTTTATCCATT
TGCGCGAGCGCTGGCTTTCTAGACACTAAATTCGGCCAGAAGATAAAGAAAACTCTTGAC
AAGATTAAAGCTGTGCTTAACGGCACTGCACTCATCGCGATTCGTGAAAAATTCATTCGA
CTAAGGGAAAAAATAAAAGCAAAGCTGACGCTCTCTCCAGCACGAAAGGCTATATTGGAC
GAAGTTATGAAGCaTATCAAAATGATCAAAAAGGATAAGATTCAAGAGAAGGGCGACTCA
ATCGATGAAATCAATGAAAAGAGTGCAATCGGACAGTTGCTGTACCAGGGTGACATCGTT
CTGACAGAAAAGCAAGCCCAGCAAATTACCGAAGACATTGAAAATGACAAAGGCGACCGC
GAAAAACGACAGGCGTTCCGTGATCGCAATTATCCGCGAACATTATGGTCGAAGGGAGTG
TACTTTCACTTTCATAGGAACGCAACTCCTGAAGTTAGAAGCGTTTTTGTGAAAGGCGCA
AAACTTTGGATGAAGGATACTTGCATCGACTTCTTCGAAAGCAACTCAGCGCCTGATAGG
ATTCGTGTGTTCAAAGAGAACGGATGTTGGTCGTACGTTGGTAGGCTGGGCGGTGAACAA
GATCTGTCACTGGGAGAaGGTTGTCAATCGGTTGGCACAGCTGCGCACGAAATTGGCCAC
GCTATTGGCTTCTACCACACTCACGCAAGACATGATCGCGATAACTTTaTTACATTCaAC
GCACAAAATGTCAAGCCCGATTGGTTGGACCAATTCACTCTTCAGACTCCGGCAACGAAT
GAGAACTATGGAATAACTTACGACTATGGAAGTATCATGCATTATGGTGCAAATAGCGCC
TCGCAGAACGGACGTCCTACAATGGTTCCGCATGATCCCAAATACGTAGAAACTCTTGGa
TCACCCATAATTtCCTTCTATGAGCTTCTCATGATCAACAAACACTACGACTGCACTAAG
AACTGTGACCCGGCTACTTCTGCGCAGTGTAAGATGGGTGGCTTCCCACATCCTCGGGAT
TGTACAAGATGCATTTGCCCTAGTGGATATGGAGGCAAACTGTGCGACCAGAAGCCAGCC
GGATGCGGATCTATATACcAGgCCACCAATCAGTACCAGACCTTGCACGACGAAGCCAGCC
GACAAGAGAGCGGGACAGAGACCTAGAGAAGACATGGACTTCTGCTATTATTGGATCACG
GCCCCAAAAGGTTCAAAAATCGAAATCAAAATTGCTGGATTATCACAAGGAGCCGCTGTT
GAAGGATGCCAGTACTGGGGAGTAGAAATCAAGACTCATGCCGATCAACGTCTTACCGGC
TACAGGTTCTGCGCACCAGAAGATGTTGGAGTTAGATTAGTGTCGAACTTCAACATCGTA
CCAATAATCACATACAACATATTCTACGCGACCTATGTCGATATTCAGTACCGTATCGTT
GGTGATAATGTTGGCGGTCCTATGCCTCAGCCACAACCAAATAGCAATTGTGTCGACAAT
GAACAGTGTGCGACACTCGTGAGAACAAAGAACTTCTGTCAGAGCAGATTTTTCACAGAG
TCCGTCaAAAGAGGTCTATGTCCAAAGTCCAGCGGTTTCTGTCGCTAACTTTTCAGCAAA
CAATGGAATAAATGTTGCACCATAAAAAAAAAAAATAAAAAA

B

MRVLLLLLLLSICASAGFLDTKFGQKIKKTLDKIKAVLNGTALIAIREKFIRLREKIKAK
LTLSPARKAILDEVMKHIKNIKKDKIQEKGDSIDEINEKSAIGQLLYQGDEVLTENQAQQ
ITEDIENDKGDREKRQAFRDRNYPRTLWSKGVYPHFHRNATPEVRSVFVKGAKLNKDTC
IDFFESNSAPDRIRVPKENGCNSYVGRLGGRQDLSLGEGCQSVGTAAREIGHAIGFTHTH
ARHDRDNFITFNAQNVKPDWLDQFTLQTPATNENYGITYDYGSIMHYGANSASQNGRPTM
VPHDPKYVETLGSPIISFYELLMINKHYDCTKNCDPATSAQCKMGGFPHPPDCTRCICPS
GYGGKLCDQKPAGCGSIYQATNQYQTLHDEIGDKRAGQRPREDMDFCYYWITAPKGSKIE
IKIAGLSQGAAVEGCQYWGVEIKTHADQRLTGYRFCAPEDVGVRLVSNFNIVPIITYNIF
YATYVDIQYRIVGDNVGGPMPQPQPNSNCVDNEQCATLVRTKNFCQSRFFTESVKRGLCP
KSSGFCR*

Figure 9 A-E

A

ATGTTTTCAC CTGTAATcGT CAGTGTGATT TTCACAATCG CCTTCTGCGA
tgcgtctcca gcaagagacG GCTTCGGCTG TTCAAACAGT GGGATAACTG
ACAAGGACCG GCAAGCATTC CTCGACTTCC ACAACAATGC TCGTCGACGG
GTTGCGAAAG GCGTTGAGGA TAGCAACTCC GGCAAACTGA ATCCAGCGAA
GAACATGTAC AAGCTgtCAT GGGACTGTGC AATGGAACAG CAGCTTCAGG
ATGCCATTCA GTCATGCCCA AGCGcgTTCG CTGGAATTCA AGGTGTTGCG
CAGAATGTAA TGAGCTGGTC AAGCTCTGGT GGATTCCCCG ATCCATCGGT
AAAGATAGAA CAAACGCTCT CCGGCTGGTG GAGTGGTGCT AAAAAGAACG
GCGTCGGCCC GGACAACAAA TACAACGGTG GCGGTCTCTT CGCCTTCTCT
AACATGGTAT ACTCCGAAAC GACGAAACTT GGCTGCGCcT ACAAGGTTTG
CGGCACTAAA CTGGCGGTTT CGTGCATCTA TAATGGAGTC GGGTACATCA
CAAATCAACC TATGTGGGAG ACAGGTCAGG CTTGCAAGAC AGGAGCAGAC
TGCTCCACTT ACAAGAACTC AGGCTGCGAG GATGGCCTTT GCACGAAAGG
ACCAGACGTA CCAGAAACAA ACCAGCAGTG CCCCTCAAAC ActGGAATga
ctgattcagt cagagatact ttcctatcgg tgcacaatga GTTCAGGTCG
AGTGTTGCCC GAGGTCTGGA ACCCGACGCT CTGGGCGGAA ATGCACCAAA
AGCAGCTAAA ATgCTCAAGA TGGTGTATGA CTGTGAAGTA GAAGCATCGG
CCATCAGACA TGGAAATAAA TGCGTCTATC AACATTCCCA TGGCGAAGAC
AGACCTGGAC TAGGAGAAAA CATCTACAAG ACTAGTGTAC TCAAATTCGA
TAAGAACAAA GCAGCCAAGC AGGCTTCACA ACTCTGGTGG AATGAGTTAA
AAGAGTTCGG CGTCGGCCCA TCCAACGTCC TTACCACTGC TTTATGGAAT
AGACCCGGCA TGCAGATTGG TCACTACACC CAGATGGCAT GGGACACCAC
CTACAAACTT CGATGTGCAG TTGTTTTCTG CAATGATTTC ACATTCGGTG
TTTGTCAGTA TGGGCCAGGA GGCAATTACA TGGGTCATGT CATCTACACT
ATGGGCCAGC CGTGTTCTCA GTGTTCGCCT CGTGCTACTT GCACCGTGAC
CGAAGGCTTG TGCAGTGCTC CTTAATCAGT TCTTAACAAT GAATATGTTA
CAGTTGAAAA AAAAAAAAAA AAAAAAAA

B

MFSPVTVSVIFTIAFCDASPARDGFGCSMSGITDKDRQAFLDFHNNIARRRVAKGVEDSNS
GKLNFAKNMMYKLSWDCAMEQQLQDAIQSCPSAFAGTQGVAQNVMSWSSSGGFPDPSTNIE
QTLSGWWSGAKKNGVGPDNKYNGGGLFAFSNMVYSETTKLGCAYKVCGTKLAVSCIYNGV
GYITNQPMNETGQACNTGADCSTYKNSGCEDGLCTKGPDVFETNQQCPSNIGMTDSVRDT
FLSVHMEFRSSVARGLEFDALGGNAPKAAKMLKMVYDCEVEASAIRHGNKCVYQHSHGEI
RFGLGENIYKTSVLKTDKNIKAAKQASQLWWNELKEFGVGPSNVLTTALWNRPGMQIGHYT
QMAWDTTYKLGCAVVFCNDFTFGVCQYGPGGNYMGHYIYTMGQPCSQCSPGATCSYTEGI
CSAP*

Figure 10 A+B

A

cGACACAACCAACGATGTTAGTTCTTGTACCACTTTTGGCTCTCTTGGCTGTTTCTGTTCATGGAAATTCTATGA
GATGCGGAAATAATGGAATGACCGACGAAGCCCGGCAGAAATTCCTCGACGTGCACAACAGTTACAGATCTATGG
TTGCCAAAGGACAGGCAAAGGATGCAATTTCGGGAAATGCTCCGAAGGCTGCCAAAATGAAGAAAATGATCTACG
ACTGCAACGTCGAATCAACTGCAATGCAAAATGCGAAAAAATGTGTTTTCGCCCATTCGCACAGGAACGGAGTTG
GCGAAAATATTTGGATGTCGACTGCGCGTCAGATGGACAAAGCACAAGCTGCTCAACAGGCTAGTGACGGTTGGT
TCAGTGAGCTTGCGAAGTATGGTGTAGGCCAGGAAAACAAGCTAACAACGCAGTTGTGGAACAGGGGAGTTATGA
TAGGACATTACACTCAGATGGTCTGGCAGGAGTCCTACAAACTCGGATGTTATGTGGAATGGTGTTCATCGATGA
CCTATGGTGTCTGCCAGTACAGTCCTCAGGGTAATATGATGAACTCACTCATCTACGAGAAAGGAAACCCGTGCA
CAAAAGACTCTGACTGTGGCTCGAACGCCAGTTGCAGCGCTGGGGAGgCgCTTTGCgTCgTGCGTGGCTAgCTGG
ACATTCCCaACGTACAACAGCGTTATAgTTAATGCaACTTTTCtTTCATCtTAtTGAgTAAAGGCatTGAAAACa
aaaAAAAAAAAAAAAAA

B

MLVLVPLLALLAVSVHGNSMRCGNNGMTDEAFQYLFLDVHNSYRSKVAKGAADDATSGNAPKAAFDNFTDHLY
DCNTVESTAMQIAERKCVFAHSHRNGTCENTMNISTAPQMDKAQAAADAASDGNFSELAKYGVSQEMKDTTQLN
NFGVMIGHYTQMVNQESTKLGCYVENCSSMTYGVCQYSPQGNIRMNSLIYERGLPCTKDSDCGSNASCSAG
EALCVVRG

Figure 11 A + B

A

ATAAGACAGCAATGAAGTCCTATCTTGTGATATCAGCTGCGATCCTCGGCATTGCTTA
TGCCGATGCTGATTATTCCAAGTGCCCGCAAAATGAAATAATGAACAACGATATGAGG
GAAAAAGTTACGGACATGCACAACGCCTACAGATCCAAATTCGCACGGGATCATCAAG
CTTCGAAAATGAGAAAATTGGTTTACGACTGTGCCATCGAAAAAGGAATCTACGAGTC
GGATACCAAGTGCGAGATGAAACCATCGATGGAGGAGGAGAACGTAGAAGTTATCGAC
GGCAACAGCGATGATCTCACTGTTATTTCAGAGGCCGGTAATTCGTGGTGGAGCGAGA
TTTTGGACCTGAAAGGAAAGGATGTGTACAACTCCGTGGACAATACATCGGAAATTGC
CAATATGGCTTGGGAAAGTCATGCGAAACTTGGTTGCGCAGTTGTTGAGTGCTCCAAG
AAAACCCATGTAGTCTGCCGATACGGACCGGAAGGAAAAGGTGAAGGAAAGAAAATTT
ACGAAAAGGGCGAAACATGCTCACAATGCAGTGATTACGGACAAGGTGTCACCTGTGA
CAATGACGAGTGGGAGGGATTACTCTGCTCATAATATTGGAAAAACATATGTGGATGA
TGATGTTCGCAAATAAATAAATCAATTACAAAAAAAAAAAAAAAAAAAAA

B

MKSYLVISAATLGIAYACADYSKCPQNEIMNNDMPEKVTDNHNAYRSKFAPDHQAS
KMRKLVYDCAIENGIYESDTKCEMKPSKEEENVEVIDGNSDDLTVISEAGNSMWSE
ILDLKGNDVYNSVDNTSEIAMMANESHAKLGIAVVECSKKTHVYGRYGEPGKDEQK
KIYEKGETCSQCSDYGQGVTCDIDEMEGLLCS*

Figure 12 A+B

A

AGAACATGATCAACATCCATTTCATAGCGCTTGCCATAACCTCTCTTTTGCCTGCCCTAT
CCGAAGGGAAACCGGTCGTATTTGTTGAACCACAGTGTAAGCCGAATGGTTACCTACACA
AGAATACAATCGACAACAATGTTCTTAAGCCGATAAATACTCGTCGAGAGGCTCTGGCCA
AGGGCACGCAACAGAATGGCTTTGACCCACCAAACCCACAAACATTCTTGCCACCAGCGA
CGGACATGACTAAACTGAGTTGGAGTTGTGATCTTGAGCAGAAGGCTATAAAAACTATCA
ACGGTAACTGTGTGAATCCGGCAAACCCAACCAAACCGAATAACGGCGAAGGATTGGCAG
ATGTCCTCTACTACGGCAACGACTATGATAACACGGTCGAAGGAGTGATCCAAGGCAATC
TCGAAGCTTGGCTGGTAAAAGCCGATTTCAATGTATTCCCTGTTACCACAAAAGGTACCG
TCATTAGCTATCCCACTTACAATGGCAACACAGATCTCTTGGCATACTCTAACTTAGTCC
GGCCTACCAATACTGAGATAGGATGTGTACTGGAAAGATGTCCAGCTACAGCCAATGTTC
CAAAGCTAGTCACGTTCTACTGTATTTTGAATGGAAAAAATATCACCAACGGAGAGGCTC
TCTATAAGGGCACAACTGTGAATACCGGAGGATGCAAAGAGGTCACATGCTCAGCGGGAT
ATGCCTGTAACAACGCCACCTTGCTATGTGAACGTAGTGCGACAACAAGCTCATCTACAT
CGGCAAGCACATCTTCATCAACAGCTTCCTCAACAAGTTCATCTATGGCAATAAGCACAT
CTTCGTCAACAAGCGCATCTGGGGCAACAACAACAAAAGCTCCTTCTCCGCAAGCGCAAT
TCCCCACAGGGACTAGCACTATGTGCAATACCAGGCATGCCTATGCTAACAGGATGACCG
ACAATCTCAGGAATGAATACGTAAGGCTGCACAACTTCCGAAGAGGCTTACTCGCAAAGG
GAGAAATTCCTCAGAAGGGTAACATATACCTACCAAAGGCGGCTGACATGTGGAAAATTA
GTTACGACTGCGGCCTGGAACAAGGAGCCATAGAACACGCAAGCCAGTGTCTCACAGGAG
GGTCCGGACAAAGCTCGAGACCAGGTGTGGGAGAGAACTTTAAAGTGATCCCAGCGGCAA
GATTTCCGACTTTCGAAGATGCAGCAAAAAAGACCGTTACTGAATGGTGGAAGCCGATTC
GTAACGTGGACTACTTCGGAAACAACGTCAACTTCCTCCCCATCTATGACCAAGACCCGA
TATCCTCCTTTACCCGGATGGCATGGCCACAACTAACAAGGTGGGGTGCTCTATCGTAA
AGTGCACAACGGACAACGTATACGTAGGCGTGTGCCGATATAGTCCAATGGGTAACATTG
TGAACAGCAACATCTACCAAATTGGGAATCCCTGCAGTGTGAGACCTACTCAAGCGACCG
GCTGTGACCCAGTCGAGGGATTGTGGTACTAGGCGCACTTTTCCGCACTGAATGGCGATT
CTGTTTTGAATTTTTGAATATTACATTAATGGATGTTAACAATGGGTCCTTTAGTTTTCT
GTTGTTAACAAGGGTGGTTAGATTGGATTGGGAATAAATGATGCAATCGCCAAAAAAAAA
AAAAAAAAA

B

MINIHFIALAITSLLPALSEGKPVVFVEPQCKPNGYLHKNTIDIINVLKPI
NTRREALAKGTQQNGFDPPNPQTFLPPATDMTKLSWSCDLEQKAIKTING
NCVNPANPTKPNNGEGLADVLYYGNDYDMTVEGVIQGNLEAVLVKADFNY
FPVTTKGTVISYPTYNGNTDLLAYSNLVRPTNTEIGCVLERCPATANVPK
LVTFYCILNGKNITNGEALYKGTTVNTGGCKEVTCSAGYACNNATLLCER
SATTSSSTSASTSSSTASSTSSSMAISTSSSTSASGATTTKAPSPQAQFP
TGTSTMCNTRHAYANRMTDNLRNEYVRLHNFRRGLLAKGEIPQKGNIYLP
KAADMWKISYDCGLEQGAIEHASQCLTGGSGQSSRPGVGENFKVIPAARF
PTFEDAAKKTVTEWWKPIRNVDYFGNNVNFLPIYDQDPISSFTRMAWATT
NKVGCSIVKCTTDNVYVGVCRYSPMGNIVNSNIYQIGNPCSVRPTQATGC
DPVEGLWY*

Figure 13 A & B

A

ATACTACTGCAGTGTGCGTTTAGGAGAACTCTCACTGCATCGAAAATGCCGAATCTACTC
CTGCTGCTGTTTCTCTCGCTACCAGGAGCGATTCTTTCAACCACTTGTCCAGGAAATGAT
CTAACAGATGCTGAACGCACACTGCTAACTAGGGTGCACAATTCCATTCGACGGGAAATA
GCGCAAGGAGTTGCAAACAACTACCATGGTGGTAAACTGCCTGCTGGAAAGAACATATAC
AGGATGAGATACAGCTGTGAGCTGGAACAGGCTGCTATTGATGCTAGTCAAACCTTCTGT
TCCGCATCATTGGAGGAACCACAGAAATATGGACAAAACATCCAAGCATACGTCACACCA
TCTATAATCGCTCGCCCGAAAAACGACCTTCTTGAAGATGCAGTGAAACAATGGTATCTG
CCTGTTATCTACTACGGCCAGCGCGACGCGGCCAACAAGTTTACGGATCCGCGCTTGTAC
ACATTTGCAAACCTCGCCTACGACAAGAACACTGCACTTGGCTGTCACTATGCGAAATGT
CAAGGCCCTGACAGAATCGTCATTAGTTGCATGTACAACAACGTCGTTCCTGACAACGCA
GTGATCTACGAGCCTGGAACTGCTTGCGTAAAAGATGCGGACTGCACTACTTATCCTCAG
TCCACATGCAAGGACAGCCTTTGCATTATTCCTACGCCACATCCACCAAATCCACCAAAT
CCACCACCAGCAATGAGTCCAAACGCTGAAATGACTGATGCAGCACGAAAGAAGGTCCTC
GGCATGCACAACTGGCGCAGATCGCAGGTCGCTCTGGGAAACGTTCAAAACGGGAAAAAT
GCTTACAACTGCCCCACTGCAACAGACATGTACAAGATAGAATATGATTGCGACCTCGAG
AACAGCGCTCTAGCGTATGCAAAGCAATGTAGTCTCGTTGGTTCAGCAGAAGGAACTCGT
CCAGGAGAAGGCGAGAATGTCCACAAAGGCGCTCTCGTAACCGATCCGGAGGCTGCAGTT
CAGACCGCAGTTCAAGCATGGTGGAGTCAAATCTCACAAAATGGACTCAATGCACAGATG
AAATTCACTGCTTTCTTGAAGGACAAGCCTGACGCTCCGACAGCGTTTACACAGATGGCG
TGGGCCAAATCCGTAAAGCTTGGATGTGCTGTCTCTAATTGTCAGGCAGATACCTTCACC
GTCTGTAGATACAAAGCTGCCGGAAACATCGTGGGCGAATTCATCTATACCAAGGGAAAT
GTATGCGACGCCTGTAAAGCCACATGCATTACCGCGGAAGGTCTTIGCCCAACGCCTTGA
TTTTCACTGGACTGTTTCACGAACAGATCAGATAAATCGTTTCATCAAAAAAAAAAAAAAA
AAAA

B

MPNLLLLLPLSLPGAILSTTCPGNDLTDAERTLLTRVHNSIRREIAQGVANNYHGGKLPA
GKNIYRMRYSCELEQAAIDASQTFCSASLEEPCKYGQNIQAYVTPSIIARPKNDLLEDAV
KQWYLPVIYYGQRDAANKTIDPRLYTPANLAYDKNTALGCHYAKCQGPDRIVISCMYNNT
VPDNAVIYEPGTACVKDADCTTYPQSTCKDSLCIIFTPHPPNFPNPPPAMSPNAENTDAA
RKKVLGMHNWRRSQVALGNVQIGKNAYNCPTATDMYKIEYDCDLEMSAIAYAKCCSLVGS
AEGTRPGEGENVTHNGALVTDPEAAVQTAVQAWWSQISQNGLNAQMKFTAFLKDKPDAFTA
FTQNAWAKSVKLGCAVSYCQADTFTYCRYKAAGNIVGEFIYTKGNVCDACKATDITADGL
CPTP*

Figure 14 A + B

A

CAGCAATAGTCCAATGAAGCTCTTCATTCTGGTTTTGGTCGCTATCCTTGGCATTGCTCA
CGCCACTGATTTTCAATGCTGGAACTTCAAATCGACGGATACACTGCGGGAACATTACCT
CAAATCCATTAACAACCTAAGGAAGAAAATCGCCGATGGATCAGCGGAAAACAAATCAGG
AAAGTGCCCGCAGGGCAAGAATATCTACAAGCTAAGCTGGGATTGTGAATTGGAACTGAA
AGCACAGCAAGCTGTAGACCAGTGCAAACCGAATGTACCCGAACCCGCAGGATATTCGCA
AATACTAAAGAAGGTTAAAAGCACCTGCGACCCAACGAAGGTCCTGAAGAAACAGATAGA
AGCATGGTGGACTAAGTCCGTGAAAGATGCTGGAGTTGATAATCCTCCAAACAACAAACA
AGGTTTGGAAGATTTCGCAAAGTTAGCAAATGGAAAGGCTACGAAGATTGGTTGTGCCCA
GAAAAACTGCAACGAACAGTTGTACGTGGCATGTGTTATTAACGAACCGGCTCCTGCAGT
GGGTATGCCAATCTATGAGGTTGGAGCTGGATGTAATTCCAAAGACGATTGTACAACGTA
TCTGCAGTCGAAGTGCAGTAACAAAGTATGCGTCGCCGGGCACCCAGGTGATGCCACCAC
TACAACATCAACACCAGCAACAACAGCACCAACAACACCCACGATTCCTGCTGGACCAAC
AACTGCGCCAGCTCCACCACCAACAACTGCAGCTCCTACAACGACGAGTACGATTGGTTC
GATTGACAATACGATTTGTCCGCAAAACCAAGTGATCACCGACTCAGTCAGGCTCACATT
CTTGAATACGCACAACGGACTCAGATCTCAACTCGCGCAAGGTCAAATCTTTATGGGAAA
TGGCGCTAGGGCGCGTCCGGCATCGAAAATGAGGAGGATGGTATATAACTGTGATGCGGA
ATCAAGCGCTCGCAATTCGGCCGCTCAGTGCCTTAGCAGCCCCGGTTCACCTAGCGGCTA
CACTGAGAACTTGCATGTTATCAACAACAACTTTGTGGACCATAACAGTGCGGCTACTCA
GGCTTTTAACGCATGGTGGTCAGAAATTAACACAGGATATATGCGTCAGGCAGAGACGGA
AAGGAATATGTACTCTCTGAGCGTTGGAATACCAAACTTCGCTAAAATGGCTTGGGAAAC
CAATGCACATCTTGGTTGTGCTATAGTCAGATGCGGTTTGAACACGAACGTCGTCTGCCC
CTACTCCCCAAAATCGGATGGAGGCCAAATTTACAAGATGGGCCCCTTTTGCAGACGTTG
CCCCGACTACCCTGGGACTTTTTGCAACCAAGGACTCTGCTCATTTTAAGACCCGCCCCG
ATATATCTTTGGGGAGATAATTTTACGAGCAATAAATCAAGCGTGAAGAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAA

B

MKLFILVLVAILGIAHATDFQCMNFKSTDTLREHYLKSINNLRKKIADGSAENKSGKCPQGKNIYK
LSMDCELELKAQQAVDQCKPNVPEPAGYSQILKKVKSTCDFIKVLKKQIEAMITKSVKDAGVDNP
PIINKQGLEDFAKLANGKATKIGCAQKNCNEQLYVACVINEPAPAVGMPIYEVGAGCNSKDDCTTY
LQSKCSNKVCVACHPGDATTTCSTPATTAPTTPTIPAGPTTAPAPPPTTAAPTTTSTIGSIDNTI
CPQNQVITDSVRLTFLNTHNGLRSQLAQGQIFMGNGARARPASKMRRMVYNCDAESSARNSAAQC
LSSPGSPSGYTELNLHVINGNFVDHNSAATQATNAWWSEINTGYMRQAETERINMYSLSYGIPNTAK
MAWETNAHLGCAIVRCGLNTNVVCPYSPKSDGGQIYKMGPFCRRCPDYPGTFCNQGLCSF*

Figure 15 A + B

A

```
   1  GGGTTTAATT ACCCAAGTTT GAGAATGATT CAATTGTTTT TGTTAGCGCT
  51  CGTACCTATG TGCATCTCAG TGAGGGAACA GTCGATAGCT GTTAAAGGAC
 101  GACTTTTGTG TGGCGATCAA CCAGCTGCGA ACGTCAGAGT AAAGTTATGG
 151  GAGGAAGACA CAGGACCAGA TCCAGATGAC CTACTGGATG CAGGATACAC
 201  GAACTCCAAC GGTGAATTCC AACTCCAAGG CGGAACAATA GAGACGACTC
 251  CTATTGACCC CGTCTTGAAA ATTTATCATG ATTGCAATGA CGTGACTGGT
 301  TTCCTAAGCG TACCTAAACC TGGCAGCAGA AAGGTGAGGT TCTCCTTACC
 351  AGACAAGTAC ATCAGCGATG GAATGGTTCC TAAGAAAGTT ATGGACATCG
 401  GTGTTATCAA TCTTGAAGTG GAATTTGAAA AGGAAGGACG TGAATTTATC
 451  GTTGACTAAG TGATCAATAA ACTCATCGCT TTCTCTTTCT ATGTAAACAT
 501  TTTTGTTGTG AACAAATCAT ATGGTTGTAC ATAATCCGAA CTGTTGGTTT
 551  TTCGAATACT GCACAAATAA AGCATTTCTT CTAAAAAAAA AAAAAAAAAA
 601  AA
```

B

```
   1  MIQLFLLALV PMCISVREQS IAVKGRLLCG DQPAANVRVK LWEEDTGPDP
  51  DDLLDAGYTN SNGEFQLQGG TIETTPIDPV LKIYHDCNDV TGFLSVPKPG
 101  SRKVRFSLPD KYISDGMVPK KVMDIGVINL EVEFEKEGRE FIVD
```

Figure 16 A & B

A

CACTTCCAGCGATGTTCTGTCGTGTTACTGTCGCCGTTTTGTTGTTGGCCGTATCGGCCTATGCCGGA
TTTTTCGATGACGTCAGTGGCATGGCCTCAGATGTTGGGAATTTCTTCACAAACCAATTCAACAATGT
GAAGGATTTGTTTGCTGGAAATCAATCGGAACTCGAGAAGAACATCAATCGAGTAAAGGATCTTCTGA
CGGCCGTCAAAGAAAAGGCTAAGATGCTTGAACCAATGGCCAATGATGCTCAGAAGAAGACGTTATCA
CAGGTGGACAACTACCTCAACGaAGTGCAACAGTTCGGTGAACAGGTAAGCAAAGAAGGCTCGGCGAA
GTTCGAGGAGAACAAGGGCAAGTGGCAGCAAATGCTGAACGACATCTTCGAGAAGGGCGGTCTGGACG
GCGTGCTGAAGCTGCTCAATCTGAAATCTGCCGGCCACTGCACACTCGTAGCGGCCATCGTCGCTCCA
GTAGTGCTGGCGTTCACCCGCTAAGCGCCACCCACTAATCGATAATTGTAGCCTGTCACCTGCCGTCG
ATCGATAATTGTTGTCGCGTGTGCGTATGCTTGCATCTATGTATGATGATGTGTATCTATATGTGATT
TGTATTCTACTTCGCCGCATTCAGCTCTGGTATTCTGAGACGGATTATCGCTTCTCGCACACACTCAC
ACACACAAATAACCCCCGATTATCTCCCGATTATCACCCGGTTAGTAGATGAGACATAATTTCCATCC
GTCCACATACTCTACTTCTATCTATGGTCAATGTGGTTCTTTATGTAAATAAACTTTTCCATCGAAAA
AAAAAAAAAAAAAAAAAAAAAA

B

MFCRVTVAVLLLAVSAYAGFFDDVSGMASDVGNFFTNQFNNVKDLFAGNQSELEKNINEVK
DLLTAVKEKAKMLEPNANDAQKKTLSQVDNYLNEVQQFGEQVSKEGSAKFEENKGKNQQML
NDIFENGGLDGVLKLLNLKSAGHCTLVAAIVAPVVLAFTR*

Figure 17 A+B

A

TCACCGCTTCCGACCGATGCTTCAGGAAACTACGTCACCGACGAAGGAACTGTCATTGAGAAAGACGAT
GAGGGAAGACCATTGGGACCGGATGGACAAGTGTTGCCCACCGACGAATCTGGAAACTACATCTATCCT
GTCGTTGGACCCGATGGAAGCCCATTGCCAACTGACGAGCACAAGCGACCAATTCACCCAGTCCTTGGA
CCTGATGGCAGCCCACTGCCGACAGACGAATCAGGCCATCCACTAGGAGAAGACGGACAGCCACTTCCA
ACAGATGCTTCTGGCGTTCCTGTGGATAAGGACGGTCAGCCGTTGCCGACAGACAGCAGTGGACACTAC
GTCACAGTTCCACGTGAAGAAGCTGTCACGAAGGAGCTACCAACGGACGAGAGCGGAAATGTCATCTAC
CCAGTGACGAAACCTGATGGATCACCGCTTCCGACCGATGCTTCAGGAAACTACGTCACCGACGAAGGA
ACTGTCATTGAGAAAGACGATGAGGGAAGACCATTGGGACCGGACGGACAAGTGTTGCCCACCGACGAA
TCCGGAAACTACATCTATCCTGTCGTTGGACCCGATGGAAGCCCCCTGCCAACTGACGAGTACAAGCGA
CCAATTCACCCAGTCCTTGGACCTGATGGCAGCCCACTGCCGACAGACGAATCAGGCCATCCACTAGGA
GAGGACGGACAGCCACTTCCAACAGATGCTTCTGGCGTTCCTGTGGATAAGGACGGTCAGCCGCTGCCG
ACAGACAGCAGTGGACACTACGTCACAGTTCCACGTGAAGAAGCTGTCACGAAAGAGCTACCAACGGAC
GAGAGCGGAAATGTCATCTACCCAGTGACGAAACCTGATGGGTCACCGCTTCCAACCGATGCTTCCGGG
AACTTTATTACTGAAGAAGGACTGATCATTGGTCCCGATGGTGTTGCTCTTCCCTACCCGCGTAACAGG
ACCTGCTCCTTAAAGCAACTGAAGATGGATATCCTTTTCGCGGTAAGCACGACAAAAGTCTCGAAATCC
ACCTTTGATAGTATCCTGCGAGCAATATCAAAGTTTGCCGATGAAGTCGACTTATCTCCTGACGTTACC
CGCATTGGATTAGTATACGGCAGCAAGGACGTAGTCGTTCCACTTCCGCTTGGGGGGTACCAAGAAAAA
GATCATATGAGGGATGAAATTCGACGCATCGAATTTTCTGATGATGGATCGCAAGACTACATTTCTCTG
TATGGTCCCGCCAAGCAACAATTCGTCATGTTTCCTCGAGCGGACAGTGCGAAGATCGCTATCTTCCTC
ATTCAAGATGAAATAAGTTACTGCTTATCCACGAGAACGTTGAGATGTGGTTGCGCTACTGCTGTGGAT
AGCGATTGTCGTCGAATAAACAATGTCCTAGCGGATGACATCAAAGTGTGCAAGGTCCCTGAAACTGCT
GTAGTCCCTACTCCAGTTGTTCATCCACAAGGGTCAAGGGCCGTCTCGGTCGTTGTGCCTCGATTCTTT
AGTGCTCCGCCATTTGACACCCACAGTCCGTCAAGGCTGACACTGCTGGCAGATTTTGCTACGGAGAAA
GAACCTCTATGCGGGGAACATTCATTTTTATCCCCCCAGAAATGGGGCAAGAATCACTGTACGTTACGC
ATTCCTCTTTCGATGCCAGGAATAGATCACAAATCCGaTGaTCaCTACTaCTaTGaTGaCCAGACCCCA
TTAGAATCCGAATATTCATTGGATTTGTTTGGGAAAGCAGAATTGGTACGATTTTTCGTACAGGtCAAT
gTGGAACGaGAACTGGaCCTTGCCCCCGAAACAGTACGATTCTCGtCGCTTCTTCGATCTAATGCaGCT
TATTACAAGTCtCCTGGATCTCGCCCAAACAACTCTAATTCGGCGACCAAACGAAGGAACAGCtCAGCC
GtCCcctGATCGGtGAACCCCAGGCTTTTAATGTTGACAACGTTTACTtTCTCGAACtCCTGCTACATT
TTTCAAAACaCAAATAAAACTTTICAAAAAAAAAAAAAAAAAA

B

SFLPTDASGNYVTDEGTVIEKDDEGRPLGPDGQVLPTDESGNYIYPVVGPDGSPLPTDEHK
RPIHPVLGPDGSPLPTDESGHPLGEDGQPLPTDASGVPVDKDGQPLPTDSSGHYVTVPREE
AVTKELPTDESGNVIYPVIKPDGSPLPTDASGNYVTDEGTVIEKDDEGRPLGPDGQVLPTD
ESGNYIYPVVGPDGSPLPTDEYKRPIHPVLGPDGSPLPTDESGHPLGEDGQPLPTDASGVP
VDKDGQPLPTDSSGHYVTVPREEAVTKELPTDESGNVIYPVTKPDGSPLPTDASGNFITEE
GLIIGPDGVALPYPRNRTCSLKQLKNDILFAVSTTKVSKSTFDSILRAISKFADEVDLSPD
VTRIGLVYCSKDVVVPLPLGGYQEKDHMRDEIRRIEFSDDGSQDYISLYGPAKQQFVMFPR
ADSAKIAIFLIQDEISYCLSTRTLRCGCATAVDSDCRRINNVLADDIKVCKVPETAVVPTP
VVHPQGSRAVSVVVPRFFSAPPFDTHSPSRLTLLADFATEKEPLCGEHSFLSPQKWGKNHC
TLRIPLSMPGIDHKSDDHYYYDDQTPLESEYSLDLPGKAELVRFFVQVNVERELDLAFETV
RFSSLLRSNAAVYKSPGSRPNNSNSATKRRNSPAVP*

Figure 18 A + B

A

TTTTATTACCCAAGTTTGAGAGAGGCTCGTGAAGTTGGTAGAAGGCTTAC
AAGGATGAGGCTCATTTTACCACTTGTCGCCTTGATAGGTATTGGTCTCT
CAGCACATTATGAAAGGGACTGTCCATGTACGCCCGAAAAATTGTGGCTC
GACGTAGTGGTAGGTATCGACACCTCTATTGGTATGACAGAGGAAGGAGT
GACACAGGTCCTCGCCGATTTGTCTACGGTATTCGGAGACACAAAAATCG
CTCAAGGGGAAGGGCACCATTCCCGCATTGGAGTCGTTACATATGGGCTG
AATGCCGAAACTAGGTACAACTTGACTGATTTCAAATCAACAGACGATAT
GCTGGAGGCGATCTGGGATATTAAGTGCAGCGACGACAAGTACTCCAATC
TCTTTGCTGGACTGACGAGGACACAAGAAATTATGAAGAATGGCCGCCAA
GGAAGACTGAGAGCAAATGTCAGATCAGCCATTATTATCTACGCGAGCGA
TTTCAGGGAAGGCGACGTGAATGACGCAGTTCAGCTGGCACATCAGATCA
AGATCGGAGGAACGGATATCATCGTAGTTGCTTTTGACCAAAAAGGAAAA
GTCAATGCGCTTGAGGGGCTCCAGAAGATTGCTTCGCCTGGTCGCCTCTT
CAAGAGCACTACGAAAAACCTAGTCGGTCTAATCCAGGATGCTTTGTGCC
AGACAAACTGCTTTTGCAAAAAGCTCTGGACGCAATACGGGGACGGATCT
GTGAAATATGGAGAATGTCTAAGGATCGGTGGAATCGACGCCAACTGGTT
AGCAGCTAAAAAAGCATGTCAGAGACTCATCCCTGGAGGTCATCTCGCCA
CTGAGCTCGACAGCTACAAGCATGACTTTATTGCACGAATGTTCAAGGAT
GACTATAGACACGAGCCTCCATACATGTATCACATCGGACTTTCCTTCGA
CAAACAGAAGAATGATTACTTCTGGGAGCAACCCAAAGATAGGATGCCTC
TGCCGCTGAAGGACTCACCTTTCCGATATTGGAGTCGCGGTTTCCCTAAC
CCTCGGGAAAAGGATACTTGCGTACTTGCAGCTCAAACAACCATACTTTC
GCCCGAGATTGGCTGGCAGAACGAGCATTGCACCAAAGTTGCAAAGAGAT
ACATCTGTCAAGTGGAATCATGTGATACAGACAACTACTGTGCCAATCTA
TAAAAGTACGACAATAAACTGCTCACCTAACAAGAATAAAATATGACATC
AAAAAAAAAAAA

B

MRLILPLVALIGIGLSAHYERDCPCTPEKLWLDVVVGIDTSIGMTEEGVTQVLADLSTVF
GDTKIAQGEGHHSRIGVVTYGLMAETRYNLTDFKSTDDMLEAIWDIKCSDDKYSNLFAGL
TRTQEIMKNGRQGRLRANVRSAIIIYASDFREGDVNDAVQLAHQIKIGGTDIIVVAFDQK
GKVNALEGLQKIASPGRLFKSTTKNLVGLIQDALCQTNCFCKKLWTQYGDGSVKYGEDLR
IGGIDANMLAAKKACQRLIPGGHLATELDSYKHDFIARMFKDDYRHEPPYMYHIGLSFDK
QKNDYFWEQPKDRMPLPLKDSPFRYWSRGFPNPREKDTCVLAAQTTILSPEIGWQNEHCT
KVAKRYICQVESCDTDNYCANL*

Figure 19 A+B

A

```
   1 GGTTTAATTA CCCAAGTTTG AGATGAAGCT ACTCGCTCTT TCCGCTCTCT
  51 TCGCGCTGGC CTTCGCTGCT CCTCGAGACA AGCGGCTAGC AGTGAGCACT
 101 ATCACTGTCA CCGGAGGACT AGGTCTGTCC ACGGGATGCG TCGTCACTGG
 151 CAACGTTCTA TATGCAAACG GTTTCCGAGT ACGTGAGATT ACACCATCGG
 201 AGCAGCAAGA GTTGGTCAAA TACCAAAACG ACGTAGCTGA GTACAAGACG
 251 GCTCTGAAAC AAGCAATCAA GGAGCGTGAG GAGAAAATCC GAGCCCGTCT
 301 CGCCGGTAAG AAGGTGAAGG CCGTGGAGTC AACCAACCAA GAGGACCTAC
 351 CGAAACCGCC ACAGAAGCCG TCATTCTGCA CACCAGAAGA CACTACCCAA
 401 TTCTTCTTCG AAGGATGCAT GATCCAGAAC AACAAGATCT ACGTCGGAAA
 451 CACTTTCGCT CGAGACCTGA CTCAGCCTGA AATCAGCGAA TTGAAAGAAT
 501 TCGAGAAGAA ATTCAAGGTC TACCAGGACT ACGTACAGAA GCAGGCCGAA
 551 CAGCAAGTGA ACAGCCTCTT CGGCGGCTCT GACTTCTTCT CGGCGTTGTT
 601 CAGCGGCGGT GAGACGAGCA AGCCATCCAC GACCACCGTG GCACCAGAAC
 651 TTCCGGAAGA CGCTCCCGAG CAGCCGCCCA CGCCGAACTT CTGCACCAGA
 701 ATAATCTAAG CCTCTAAATT GTTCGTTTCG CTATTGGATT GGTTGGTTTG
 751 GTGAATAGCG ATTCCGCTTC CCCTCTCGTA CTTACGGTGT CGACTAGCAC
 801 ATTAGTCATG CGTTGCAATA TTTGAACATT GTATTGAGGT ATATTGTACA
 851 TTTATATAAT AAAATTATTA TCTTAAAAAA AAAAAAAAAA AA
```

B

```
   1 MKLLALSALF ALAFAAPRDK RLAVSTITVT GGLGLSTGCV VTGNVLYANG
  51 FRVREITPSE QQELVKYQND VAEYKTALKQ AIKEREEKIR ARLAGKKVKA
 101 VESTNQEDLP KPPQKPSFCT PEDTTQFFFE GCMIQNNKIY VGNTFARDLT
 151 QPEISELKEF EKKFKVYQDY VQKQAEQQVN SLFGGSDFFS ALFSGGETSK
 201 PSTTTVAPEL PEDAPEQPPT PNFCTRII
```

A

Figure 20A

```
1     gggtttaattacccaagtttgaggATGAGGGTACTCCTGTTACTGCTACTTTTATCCATTTGCGCGAGCGCTGGCTTTCT   80

81    AGACACTAAATTCGGCCAGAAGATAAAGAAAACTCTTGACAAGATTAAAGCTGTGCTTAACGGCACTGCACTCATCGCGA  160

161   TTCGTGAAAAATTCATTCGACTAAGGGAAAAAATAAAAGCAAAGCTGACGCTCTCTCCAGCACGAAAGGCTATATTGGAC  240

241   GAAGTTATGAAGCATATCAAAATGATCAAAAAGGATAAGATTCAAGAGAAGGGCGACTCAATCGATGAAATCAATGAAAA  320

321   GAGTGCAATCGGACAGTTGCTGTACCAGGGTGACATCGTTCTGACAGAAAAGCAAGCCCAGCAAATTACCGAAGACATTG  400

401   AAAATGACAAAGGCGACCGCGAAAAACGACAGGCGTTCCGTGATCGCAATTATCCGCGAACATTATGGTCGAAGGGAGTG  480

481   TACTTTCACTTTCATAGGAACGCAACTCCTGAAGTTAGAAGCGTTTTTGTGAAAGGCGCAAAACTTTGGATGAAGGATAC  560

561   TTGCATCGACTTCTTCGAAAGCAACTCAGCGCCTGATAGGATTCGTGTGTTCAAAGAGAACGGATGTTGGTCGTACGTTG  640

641   GTAGGCTGGGCGGTGAACAAGATCTGTCACTGGGAGAAGGTTGTCAATCGGTTGGCACAGCTGCGCACGAAATTGGCCAC  720

721   GCTATTGGCTTCTACCACACTCACGCAAGACATGATCGCGATAACTTTATTACATTCAACGCACAAAATGTCAAGCCCGA  800

801   TTGGTTGGACCAATTCACTCTTCAGACTCCGGCAACGAATGAGAACTATGGAATAACTTACGACTATGGAAGTATCATGC  880

881   ATTATGGTGCAAATAGCGCCTCGCAGAACGGACGTCCTACAATGGTTCCGCATGATCCCAAATACGTAGAAACTCTTGGA  960

961   TCACCCATAAATTTCGTTCTATGAGCTTCTCATGATCAACAAACACTACGACTGCACTAAGAACTGTGACCCGGCTACTTC 1040
                    Mtp 5-1 →

1041  TGCGCAGTGTAAGATGGGTGCTTCCCACATCCTCGGGATTGTACAAGATGCATTTGCCCTAGTGGATATGGAGGCAAAC 1120

1121  TGTGCGACCAGAAGCCAGCCGGATGCGGATCTATATACCAGGCCACCAATCAGTACCAGACTTTGCACGACGAAATTCGA 1200

1201  GACAAGAGAGCGGGACAGAGACCTAGAGAAGACATGGACTTCTGCTATTATTGGATCACGGCCCAAAAGGTTCAAAAAT 1280

1281  CGAAATCAAAATTGCTGGATTATCACAAGGAGCCGCTGTTGAAGGATGCCAGTACTGGGGAGTAGAAATCAAGACTCATG 1360

                 Mtp 3-1
1361  CCGATCAACGTCTTACCGGCTACAGGTT TGCGCACCAGAAGATGTTGGAGTTAGATTAGTGTCGAACTTCAACATCGTA 1440

1441  CCAATAATCACATACAACATATTCTACGCGACCTATGTCGATATTCAGTACCGTATTGTTGGTGATAATGTTGGCGGTTC 1519

1521  TATGCCTCAGCCACAACCAAATAGCAATTGTGTCGACAATGAACAGTGTGCGACACTCGTGAGAACAAAGAACTTCTGTC 1600

1601  AGAGCAGATTTTTCACAGAGTCCGTCAAAAGAGGTCTATGTCCAAAGTCCAGCGGTTTCTGTCGCTAActtttcagcaaa 1680

1681  caatggaataaatgttgcaccataaaaaaaaaaaaaaaaaa 1722
```

Figure 20B

B

M R V L L L L L L L L S I C A S A G F L

D T K F G Q K I K K T L D K I K A V L N G T A L I A

I R E K F I R L R E K I K A K L T L S P A R K A I L D

E V M K H I K M I K K D K I Q E K G D S I D E I N E K

S A I G Q L L Y Q G D I V L T E K Q A Q Q I T E D I

E N D K G D R E K R Q A F R D R N Y P R T L W S K G V

Y F H F H R N A T P E V R S V F V K G A K L W M K D T

C I D F F E S N S A P D R I R V F K E N G C N S Y V

G R L G G E Q D L S L G E G C Q S V G T A A H E I G H

A I G F Y H T H A R H D R D N F I T F N A Q N V K P D

W L D Q F T L Q T P A T N E N Y G I T Y D Y G S I N

H Y G A N S A S Q N G R P T M V P H D R K Y V E T L G

Mcp 5-1 →

S P I I S F Y E L L M I N K H Y D C T K N C D P A F J

A Q C K N G G F P H P R D C T R C I C P S G Y G G K

L C D Q K P A G C G S I Y Q A T N Q Y Q T L H D E I G

D K R A C Q R P R E D M D F C Y Y W I T A P K G S K I

E I K I A G L S Q G A A V E G C Q Y W G V E I K T H

← Mcp 3-1

A D Q R L T G Y R F C A P E D V G V R L V S N F N I V

P I I T Y N I F Y A T Y V D I Q Y R I / G D N V G G P

M P Q P Q P N S N C V D N E Q C A T L V R T K N F C

Q S R F F T E S V K R G L C P K S S G F C R .

1722

Figure 21 A+B

A

TTTAATTACCCAAGTTTGAGCAATGAAATACTTTGTTCTCTGCTTCTGCGCCTTCTTCGTGGTCAATGCTGATGA
GGAAGACGATCTACCCCGCAATCCTTTGTGGGACGCTTACAAGGATGACAATGGCAAATATGTGATTCCGTACGT
CATTAACGGAAGTTATGGAGAGGAGAAAAAAGTTTTATTTGAAATGATGGACGAAATCGATAAGAATACCTGCGT
CCGCTTCATACCCAGATCGACAGAGCAGGATTATATCGAAATCGTAAACAGACTAGGAGAAGGAACCGGCGCTGT
TGTAGGTAAACCTGGAGGGAAAAGCATCGTGTTGTTGGAATCGAGCAAAATTCTAAATGATCCAACTCCTGCGCC
TGTAATGCAGACTTTGATGAAAATCATTGGCTTACCACCTGAACACATTCGACCAGAGAGGAAAGATCATATCAA
GATACACTGCGAGAACATCGAGAAAGGTTACGAAGCTTTCTTCGCCCTCTCCTCTGTTAAGCCCGATCCGTACGG
AATACCATATGATTACTACTCCATCATGCACTACAAGAAGGACGCCTTTGCCAAGCCGGGCACGATCACAATGGA
AACTTTGGATAAGCGCTACCAGGATATCATTGGGAATCAAGAGAAGCCGTCGAAGTTGGATTACAAGAAGATCTG
CACCAAGTATAAATGCGATATCTGCATGGGTGAGAAGATGAAGTATTAAAGAAAGGAATGACGTTAACATAAGGA
ATGGTTGCCGATTTCAACAAAACGAACGTCTAATACATCTGGTGTTGTTCCTCATGTTAGAAATCCAATAAAGCA
TTTCACCGAAAAAAAAAAAAAAAAA

B

MKYFVLCFCAFFVVNADEEDDLPRNPLNDAYKDDNGKYVIPYVINGSYGEEKKVLFEMMDEIDKNTCVRI
IPRSTEQDYIEIVNRLGEGTGAVVGKPGGKSIVLLESSKILNDPTPAPVMQTLMKIIGLPPEHIRPERND
HINIHWENIEKGYEAFFALSSVKPDPYGIPYDYYSINHYKKDAFAKPGIITMETLDKRYQDIIGNQEKPS
KLDYKKICTKYKCDICMGEKMKY*

Figure 22 A+B

A

TTAATTACCCAAGTTTGAGAATGGCAACTATGCTCGCGGTATGTCGTTTGGTCGTCTTCCTCACCGCCG
TTCACACGGTGTCAGCAAGGGGAAGACCCATCAACATTTTCGAGCAAAAGGAAGGAGGAGACATCACAC
AGCTGAGAGAAAAAGGGAGCGCAATGTTCAACGCCCTTCACAGAACGTCGAGTCTGAAGTGGAACAAGA
GGGATTCAGACGGGAATTTTGTCATACCGTACATAATTACAGGACGCTATGACCGAACGGAGCGGGGAA
TATCAAGGAAGCAATGAGGCGCATCGAGGCAAATACGTGTATTCGTTTCAAGCAAAGAGACTATGAGAG
AGACTATATCGAGATCCAGAACAAAGCTGGACATGGATGTTACACCAATGTCGGTCGTGTCGGTGGCAG
AAGTATACTGATGCTCGAGTCCAGCTTCGAGGAAACATGCATGGAGACAGAAATCGTGCTGCACGAGTT
GATGCACGTTGTCGGTCTGTGGCACGAACACATGCGCCACGATCGTGACAAATACATCAAAGTGCACTA
CGAGAACATCGAAAGGAGTTACTGGAACCAATTCGAGAAAGTCTCACCGATGGAAGCTACCACGTATAA
CGTACCGTATGACTACAAATCCGTCATGCACTACGAGAAGTCGGCATTCGCCAGACCTGGACGAATCAG
CATGGAAACGCTTGATCCCAAATATCAGAACGTCATCGGACACCAGAAGGACGCCTCTCCCAGTGACTA
CCGTAAGATCTGCGAGATATACCAGTGTAAGAAGTGCATGAACGGCAAGATCGAGATCGGAGGCGACTC
GGACTCCAACCCGAAACCGCCAACCGAGGCCCCAGTCACCATCAGACCGGCGCCAGAAATCAACGGAGA
ATGCCGCGATATGATCCCGTCTTTCTGCCGAGCGTTGGCCCGCTCGCACATGATCGACTGCAGCTTCTT
CCATAAACAACAATGCTGTGCAACCTGCGCCGAGTTAGGGCACAGGGATCAGGACCAGGGAGGATGGTT
AGAACAAACAGGATGGCCATTCGACGGGCTCTTCCGAATATTCGGACAAGGAGGGTGGCCTTTCACCTT
CTTCAATCGCTGGTAACTAATACAGGTCAAATAAATATTTGCAAAATAAAAAAAAAAAAAAAAAA

B

MATMLATCRLVVFLTAVHIVSARGRFINIPEQKEGGDITQLREKGSAMFNALHFTSSLKWNIKR
DSDGNFVIPYIITGRYDRTEPGTIKEAMRRIEANTCIRFKQRDYERDYIEIQNKAGHGCYTNV
GRVGGRSILMLESSFEETCMETEIVLHELNHVVGLWHEHMRHDRDKYIKVHYENIERSYWNQF
EKVSPMEATTYNVPYDYKSVMHYERNSAFARPGRISMETLDFKYQNVIGHQKDASPSDYRKICE
IYQCKKCMNGKIEIGGDSDSNPKPPTEAPVTIRPAPEINGECRDMIPSFCRALARSHMIDCSF
FHKQQCCATCAELGHRDQDQGGWLEQTGMPFDGLFRIFGQSGWPFTFFNRM*

Figure 2A & B

A)

CAAGTTTGAGCATGCTTCGACTAGCTCTCTTCGCGGTCCTCTTCGCTTGCGCATTTTCAG
CACCCAACGTTGAAGTGAACAAATTCGAGGATATTCCTGAGCAGTACAGAGAACTGATCC
CCAAGGAGGTAGCCGACCACATCAAGGCTATCACTGAGGAGGAGAAGACCATCTTGAAGG
AGGTGCTGAAGGACTACGCCAAATACAAGGACGAGAATGAGTATTTGGCAGCGCTGAAGG
AAAAGTCACCCAGCCTGCACGAGAAGGCAAAGAAGTTCCACGACTTCATTAAGGCTAAGG
TCGACGCACTTGGGGATGAAGCAAAGGCGTTCGTGAAGAAAGTGATTGCTGCTGCTCGCA
AACTGCACGCAGAGCTCCTTGCCGGGAACAAACCTTCTCTTGAGGAACTGAAGAACACTG
TCAAGAAATACGTGGCCGAATTCGACGCGCTGACCGCAGCCGCAAAAGAAGATCTCAAGA
AGCACTTCCCCATCCTCACTTCCATTTTCACCAACGAGAAGGCAAAGGCGTTGATGGACA
AGCACTTGCCGAACTAGGTGAAGCAGCAGTTGTTTTTAGTCGAATAAATGTTTCAACTTT
TTAAAAAAAAAAAAAAAAAAA

B)

MLRLALFAVLFACAFSAPNVEVNKFEDIPEQYRELIPKEVADHIKAITEEEKTILKEVL
KDYAKYKDENEYLAALKEKSPSLHEKAKKFHDFIKAKVDALGDEAKAFVKKVIAAARKL
HAELLAGNKPSLEELKNTVKKYVAEFDALTAAAKEDLKKHFPILTSIFTNEKAKALMDK
HLPN*

Figure 24A

A

```
   1  GGCACTTCGA CATGAAGGTC CTTGCCTTAG TGTTACTTTG GGCTGCAACA
  51  GCCACTGCTC TGCTAGACAT ATGTAAGGAG GAAATCAAGA CTGGAAATTG
 101  TAGGGGGGCC TTCCGCAAGT TTGGCTACGA TCGATGCACG AATAAATGTA
 151  TTCCGTACAC GTATGGAGGC TGTGGAGGGT CGAGCAACAT GTTCGACACT
 201  TTGGAAGAAT GCCAAGAAAA ATGTGGCAAG CCCGAGGACC GCTGCTCAAA
 251  ACCACTGGAA AGAGGAATAT GTCTGGCATC AATGAAAAGA TATGGCTACG
 301  ATACAAGCAG TAAGAAGTGT AAGGCCTTCA TCTATGGCGG ATGTGGCGGT
 351  AACGAGAACA ATTTCGAGAC AATGGCTGAG TGCCGAGAAA CTTGCAAGGA
 401  CACCTCTTCT GAAGAAGAAT CAGTACCTGA TGCATGCCTA TTGCCATCAG
 451  AAGTGGGGCC ATGTAAAGGA AAAGAACGTC GCTTCTACTT TGATCAAAAA
 501  CGTGGCAACT GCAAGTCGTT CTTCTTCGGC GGTTGTGGTG GAAATGGAAA
 551  TAATTTCATG ACCAAAGCCA AATGCATGGA AACCTGCTCG AAACACATCA
 601  AACCTGAAAC AGAGCAAGAC GTCTGCTCAC AGCCAATTAA AGCTGGACCT
 651  TGCATGGCAA TGTTGAAAAG ATATGCGTAC GACAACAAGA AAAAGAGGTG
 701  CGTGCAGTTT ATCTATGGAG GATGTAAGGG AAACAAGAAC AACTTCGAGA
 751  GCATGGAAGA GTGCACCCGG ACATGTAAGA AAGCAGTACC AGAGCCTGAG
 801  CAGGACACCT GCTCACAGCC CATTGAAGTT GGACCTTGCA AGGCAATGTT
 851  GAAAAGATAT GCGTACGACA ACAAGAAAAA TAAGTGCGTA CGGTTTATCT
 901  ATGGAGGATG TAAGGGAAAC AAGAACAACT TCGAAAGCAT GGAAGAGTGC
 951  ACCCGGACAT GTAAGAAAGC AGTACCAGAG CCTGAGCAAG ACACCTGCTC
1001  ACAGCCCATT GAAGTTGGAC CTTGCAAGGC AATGTTGAAA AGATATGCGT
1051  ACGACAACAA GAAAAATAAG TGCGTGCGGT TTATCTATGG AGGATGTAAG
1101  GGAAATAAGA ACAACTTCGA AAGCATGGAA GAGTGCACCC GGACATGCAA
1151  GAAAGCAGTA CCAGAGCCTG AACCTGAGAA AGAGACCTGC TCACAGCCCA
1201  TTGAAGTTGG ACCTTGCAAG GCAATGTTGA AAAGATATGC GTACGACAAC
1251  AAGAAAAATA AGTGCGTACG GTTTATCTAT GGAGGATGTA AGGGAAACAA
1301  GAACAACTTC GAAAGCATGG AAGAGTGCAC CCGGACATGT AAGAAAGCAG
1351  TACCAGAGCC TGAGCAAGAC ACCTGCTCAC AGCCCATTGA AGTTGGACCT
1401  TGCAAGGCAA TGTTGAAAAG ATATGCGTAC GACAACAAGA AAAATAAGTG
1451  CGTGCGGTTT ATCTATGGAG GATGTAAGGG AAATAAGAAC AACTTCGAAA
```

Figura 24 B

B

1501 GCATGGAAGA GTGCACCCGG ACATGCAAGA AAGCAGTACC AGAGCCTGAA

1551 CCTGAGAAAG AGACCTGCTC TCAGCCCATT GAAGCTGGTC CTTGCAAGGC

1601 AATGGTGAGA CGATTTGCTT ACGACAACGC AAAGGAAAAG TGCGTAGAGT

1651 TCTTTTACGG CGGATGCAAA GGAAACAAGA ACAACTTCGA AACCATGGAA

1701 GATTGTACTT TTACGTGTGA GCAACGGCTG GCAAAGCCCG AGCTTGAGAA

1751 GGATGTGTGT TCACAACCTA TCACGGCTGG TCCTTGCAGA GCATCAATAC

1801 CGCGATACGG CTATGATTCT AAAAAACGAA AGTGTGTGAA GTTCACCTAC

1851 GGAGGATGCA AAGGAAATGG TAATAGGTTC CCGACGAAGA ATGAATGTGA

1901 GAAGACATGC AAGAGAGGAG CAACTGGAAC TACGAATCCA GGAGGTGAAA

1951 ATGATAAATG CTTGCTGCCA ATTGTTACCG GCCCATGCAA AGGAAAAAAT

2001 CGTCGCTATG CTTACAACAA CAAGACAGGA AAATGCGTGA GATTCACCTA

2051 TGGTGGTTGC GGGGGAAACG AGAACAACTT CAAGACTAAG AAAGACTGCC

2101 AGGATGCGTG CGAAAACATA AATGCAGCTA GTCCATGCAC CCTTCCTATC

2151 GACAAAGGAG AAGGCGACTT GAATCTGACC AGATATGGCT TCAAAAATGG

2201 CAAGTGTGTC GCGTTCAAAT ACGGCGGACG ACGGGGAAAT CTCAACAATT

2251 TTGGAAGCAA AGCCGATTGC AAAGAAGCCT GCCTCAAGTA ACTACGAAGC

2301 TCCGCTGCAA ATCCCAGAAG ATCATTCGGT TGTCTCTGCC GTCTATGAAA

2351 CAATAAAGTA TTAATTTTGT TAAAAAAAAA AAAA

Figure 24C

C

```
  1  MKVLALVLLW AATATALLDI CKEEIKTGNC RGAFRKFGYD RCTNKCIPYT
 51  YGGCGGSSNM FDTLEECQEK CGKPEDRCSK PLERGICLAS MKRYGYDTSS
101  KKCKAFIYGG CGGNENNFET MAECRETCKD TSSEEESVPD ACLLPSEVGP
151  CKGKERRFYF DQKRGNCKSF FFGGCGGNGN NFMTKAKCME TCSKHIKPET
201  EQDVCSQPIK AGPCMAMLKR YAYDNKKKRC VQFIYGGCKG NKNNFESMEE
251  CTRTCKKAVP EPEQDTCSQP IEVGPCKAML KRYAYDNKKN KCVRFIYGGC
301  KGNKNNFESM EECTRTCKKA VPEPEQDTCS QPIEVGPCKA MLKRYAYDNK
351  KNKCVRFIYG GCKGNKNNFE SMEECTRTCK KAVPEPEPEK ETCSQPIEVG
401  PCKAMLKRYA YDNKKNKCVR FIYGGCKGNK NNFESMEECT RTCKKAVPEP
451  EQDTCSQPIE VGPCKAMLKR YAYDNKKNKC VRFIYGGCKG NKNNFESMEE
501  CTRTCKKAVP EPEPEKETCS QPIEAGPCKA MVRRFAYDNA KEKCVEFFYG
551  GCKGNKNNFE TMEDCTFTCE QRLAKPELEK DVCSQPITAG PCRASIPRYG
601  YDSMKRKCVK FIYGGCMGNG NRFPTKNECE KTCKRGATGT INPGGENDKC
651  LLPITGPCK GKNRRYAYNN KTGKCVRFTY GGCGGNENNF KTKKDCQDAC
701  ENIMAASPCT LPIDKGEGDL NLTRYGFKNG KCVAFKYGGR PGNLNNFGSK
751  ADCKEACLK*
```

Figure 25 A+B

A

ctcgcactat ttaccctagc tgtagctagc gtacacagaa ggacattcca ccacccgcgc
cgctatgtga agtcggtgtc gctttcgcgt caaccaacac ttcgtgaacg attgctcgga
actggcagtt gggaagacta tcagaaacag cgttaccact accagaagaa acttctggca
aagtatgcgg cgatcaaagc gacaaaactg cagtctacca atgaaattga cgagcttctt
cgcaactaca tggatgcgca atacttcggc accatccaaa tcggaactcc agcgcagaat
ttcacagtga ttttcgacac cggttcttcc aatctgtggg tgccgtccga gaaaatgcca
ttccacgaca tcgcgtgcat gcttcgtcac cgttatgact ccggagcatc gtcgacgtac
aaggaggatg gacgaaagat ggccatccag tatggcactg gctcaatgaa gggcttcatt
tcaaaggata atgtctgcat cgctggaatt tgcgctgaag agcaaccgtt tgctgaggca
acgagcgagc caggcctcac cttcatcgca gcgaagtttg atggaatcct tggcataacc
ttccctgaaa tctctgtgct cggagtaccg ccagtattcc acacgttcat tgaacagaag
aaagtgccga gcccggtgtt cgctctctgg ctcaacagaa atcctgactc ggaactcgga
ggtgagatca ccctcggtgg aatggacacc cgacgatacg ttgagccgat cacatggact
ccagtgacaa ggcgagggta ctggcagttc aagatggaca aggttcaagg aggatcaaca
tccattgctt gccccaatga attttctgga tgccaggcta ttgctgacac tggcacttcc
ctcattgctg gacctaaagc acagtcgagg gcatccagaa attcattggt gcttgagcca
acttatgaag gagagtacat gattccttgc gacaaggtgc ctttccctcc ccgattatcc
ttcgttatcg aagccccgcac tttcaccctc aagggtgagg attacgtctt gaccgtgaaa
gctggtggta aatcgatttg cctgtccggt ttcatgggaa tggacttccc agagaggatc
ggagagttgt ggattcttgg ggacgttttt attggaaagt actacaccgt cttcgatgtt
ggccaggccc gtcttggatt cgctcaagct aagtcagaag atggctatcc ggttggccct
gctgttcgaa ggtacaacaa gttctcggag gacagcggca gtgatgagga tgatgtattc
actctataag taacatgtat ccacaacttg ctctaatcct gatacgtgta ccgtgtctaa
cgtgcttcca cctttgataa actgattaat ctc

B

LALFTLAVASVHRRTFHHPRRYVKSVSLSRQPTLRERLLGTGSW
EDYQKQRYHYQKKLLAKYAAIKATKLQSTNEIDELLRNYMDAQYFGTIQIGTPAQNFT
VIFDTGSSNLWVPSEKMPFHDIACMLRHRYDSGASSTYKEDGRKMAIQYGTGSMKGFI
SKDNVCIAGICAEEQPFAEATSEPGLTFIAAKFDGILGITFPEISVLGVPPVFHTFIE
QKKVPSPVFALWLNRNPDSELGGEITLGGMDTRRYVEPITWTPVTRRGYWQFKMDKVQ
GGSTSIACPNEFSGCQAIADTGTSLIAGPKAQSRASRNSLVLEPTYEGEYMIPCDKVP
FPPRLSFVIEARTFTLKGEDYVLTVKAGGKSICLSGFMGMDFPERIGELWILGDVFIG
KYYTVFDVGQARLGFAQAKSEDGYPVGPAVRRYNKFSEDSGSDEDDVFTL

Figure 26 A & B

A

TTGACACAGGTTCATCAAATCTCTGGNGCTCCTGCATATTATGTGGAGGAAATCGCTTCGAACCTGACCG
CAACGTACAACAAGGAACATGACCTCTACTACATCGACTGCAGAGCCAATGCGTCTATCACGCTCACAATT
GGCCAGCGCCAGTACAAAATTGAATCAAAGAACCTCATCATTCATGTCGAAGCAGATACATGCATCTTGG
CACTACATGGATACCACTTTCTCGGAGCAACATGGATCTTTGGTGCACCGTTCATAAGGCAGTTCTGTAA
TATTTATGATATGGGTAACAAAAGGATAGGATTCGCTCATTCGCTGCAGAATTAGCCTGCATTTACTAGT
TNTTATTCGACATTNTTAAACAACTCCCTCAATAAAGTATTGNGTTTCAAAAAAAAAAAAAANAAAAAAAA

B

LTQVHQISGAPAYYVEEIASNLTATYNKEHDLYYIDCRANASITLTIGQRQYKIE
SKNLIIHVEADTCILALHGYHFLGATWIFGAPFIRQFCNIYDMGNKRIGFAHSLQN*

Figure 2A-B

A

1 aaggcgtatc cggaatgcgg ggagaatgag tggctcgacg actgtggaac tcagaagcca
61 tgcgaggcca agtgcaatga ggaacccccc gaggaggaag atccgatatg ccgctcacgt
121 ggttgtttat tacctcctgc ttgcgtatgc aaagacggat tctacagaga cacggtgatc
181 ggcgactgtg ttagggaaga agaatgcgac caacatgaga ttatacatgt ctgaacgaga
241 aagcaacaat aaccaaaggt tccaactctc gctctgcaaa atcgctagtt ggatgtctct
301 tttgcgtccg aatagtttta gttgatatta agtaagaact cctgctggaa agaataaagc
361 tttccaactc c

B

KAYPECGENEWLDDCGTQKPCEAKCNEEPPEEEDPICRSRGCLL
PPACVCKDGFYRDTVIGDCVREEECDQHEIIHV

Figure 28 A

A GTTTTCTCCTGTAGTCGTCATCAGTGTGGTACTCACAGTCGCCTTTTGCGATGCAAGC
CCAGTGAAAGCCAGCTTTGGCTGCTCTAACAGTGGGATAACTGATAGCGATCGGCA
AGCGTTCCTCGACTTCCACAACAATGCTCGGAGACGAGTTGCGCAAGGAGTTGAGG
ATAACAAATCCGGCAAACTGAATCCAGCGAAGAACATGTATAAGCTGGACTGGGAC
TGTGAGATGGAACAGAAGCTCCAGGATGCTATCCAATCCTGCCCAGGCGGCTTTGCT
GGAATTCAAGGTGTTGCGCAGAATATAATAAGCTGGTCAGGCTCCGGTGGATTCCCG
AATCCATCAGAAAAGATAAACTCAACACTTGCCAGCTGGTGGGGTGGTGCAAAAAA
CAACGGCGTCGCCTCAGACAACAAATACACTGGTGGAGGTCTTTACGCCTTTTCCAA
TATGGTCTTCTCTGAGACGACAAAACTCGGTTGCGCCTACAAGGTTTGCGGCACTAA
ACTGACGCTATCGTGCATTTATAACGGAATTGGGTATATGACAGGCGCGCCAATGTG
GGAGACAGGTCAGGCTTGCAAGGCCGGAGCAGACTGCACCACATTCAAGAACTCAG
GTTGCGAAGACGGCCTCTGCACGAAAGGAGCAGATGTCCCTGAGACGAACCAGCAG
TGTCCGTCAAACACCGGAATGACTGATTCAGTCAGAGATACTTTCCTTTCATTGCAC
AACGAATTCAGGTCGAGTGTTGCCCGAGGTTTGGAACCCGATGCTCTTGGCGGAAAT
GCACCAAAAGCATCCAAAATGCTCAAGATGGTGTACGACTGTGAAGTAGAAGCATC
AGCCATCAGACATGGGAATAAATGCGTCTACCAACATTCTCACGGCGATGAAAGAC
CCGGCCTAGGAGAAAACATTTACAAAACCAGCATTGTCAAATTTGAGAAGAACAAA
GCAGCCAAGCAGGCTTCACAACTTTGGTGGAACGAGTTGAAAGAGTTCGGTGTCGG
CCCATCCAACATGCTCACTGATGCTCTCTGGAACAGGCCCAACATGCAGATTGGTCA
TTACACCCAGATGGCCTGGGAGAGCACCTACAAACTTGGATGCGCTGTTATATTCTG
CAATGATTTCACATTTGGTGTTTGTCAGTATGGACCAGGAGGCAATTACATGAATCA
CCTGATCTACACTATTGGTCAACCATGTTCCGAGTGTGAAGCTACCGCCACTTGCAG
CGTGACCGAAGGATTGTGCAGTGCTCCTTAATTAGTCTACAATAAAGATGCTACTTT
CCAAAAAAAAAAAAAAAAA

Figure 28 B

B

FSPVVVISVVLTVAFCDASPVKASFGCSNSGITDSDRQAFLDFHNNARRRVAQGVEDNK

SGKLNPAKNMYKLDWDCEMEQKLQDAIQSCPGGFAGIQGVAQNIISWSGSGGFPNPSEK

INSTLASWWGGAKNNGVASDNKYTGGGLYAFSNMVFSETTKLGCAYKVCGTKLTLSC

YNGIGYMTGAPMWETGQACKAGADCTTFKNSGCEDGLCTKGADVPETNQQCPSNTGM

TDSVRDTFLSLHNEFRSSVARGLEPDALGGNAPKASKMLKMVYDCEVEASAIRHGNKC

VYQHSHGDERPGLGENIYKTSIVKFEKNKAAKQASQLWWNELKEFGVGPSNMLTDAW

NRPNMQIGHYTQMAWESTYKLGCAVIFCNDFTFGVCQYGPGGNYMNHLIYTIGQPCSE

CEATATCSVTEGLCSAP*

Figure 29A+B

A

GTTCTCGTACCACTTCTGGTTCTACTGGCTGTTTCTGTTGATGCAAATTCCGTGAGAT
GCGGAAATAATGGAATGACCGACGAGGCCCGACAGAAATTCCTCGACATGCACAAC
GGTTACAGATCGCAGGTTGCCAAAGGACAGGCCAAGGATGCACTCTCAGGAAATGC
ACCAAAAGCTGCCAAAATGAAGAAAATGGTATATGACTGTGGtGTCgAATCAACTGC
AATGCAgAATGCTAAAAAATGtGTCTTCACTCATTCGCATATGAAGGGACTTGGCGA
AAACATATGGATGACgACTGCACgCgAGATGGATAAAGTGAAATCAGCTGAACAGGC
TAGTCAGGGTTGGTTCAGTGAACTCGCGGAATACGGTGTAGGGCCTGAAAATAAGC
TAACAATGCAGCTGTGGAACAGGCCAAATACTCAGATTGGACATTACACGCAGATG
GTCTGGCAGGACACCTACAAACTCGGATGTTATGTGGAATGGTGCTCATCTATGACC
TACGGCGTGTGTCAGTATAGCCCTCAAGGTAACATGATGAACTCAATCATCTACGAA
AAAGGAAACCCCTGCACTCAGGATTCGGACTGTGGCTCAAATGCCAGATGCACcGCT
GACAAGGCGCTTTGCATCGTGCATGGATAgCTGGGCTATCCCACGGTCAACAGCGCT
TCTACTAATTAGCTTTGCTTCCTCTATAAATAAATGCATTGAAACAAAAAAAAAAAA
AA

B

VLVPLLVLLAVSVDANSVRCGNNGMTDEARQKFLDMHNGYRSQVAKGQAKDALSGN
APKAAKMKKMVYDCGVESTAMQNAKKCVFTHSHMKGLGENIWMTTAREMDKVKSA
EQASQGWFSELAEYGVGPENKLTMQLWNRPNTQIGHYTQMVWQDTYKLGCYVEWCS
SMTYGVCQYSPQGNMMNSIIYEKGNPCTQDSDCGSNARCTADKALCIVHG*

Figure 30A

A

GTTTGAGGATGAGGGTATTCCTTTTAGTCCTCTTGTTGGCTATTTGTGCGAGCGCTGG
TTTCTTTGACACCAAGCTTGGTGAGAAAATAAAGAAAACGCTTGGCAAAATCAAAG
CTGCGCTCAACGGCACCTTACTCATGAAAATTCGTGAAAAATTCATTGCACTGAGAG
AAAAAATAAAGGCTAAGCTGAAGCTCTCCCCGGCACGAAAAGCCCTACTAGGCGAA
ATTATGAAGCACATTATTAAAATCAAAAAGGATAAAATTCAAGAGAAAGGTGACTC
AATCGAAGAAATCAACTCGAAAAGTGCTATCGGAGAGTTGCTGTACCAAGGTGACA
TCGTTCTGACAAATAAGCAAGCCCAGGAGATTGTTGATGACATTGAGGGTGATGAA
AATGACCGCGGAAAACGACAGGCGTTCCGTGATCGCAACTATCCACGGACATTATG
GTCGAAGGGAGTGTATTATTACTTCCATGGAAACGCAACTCCTGAGGTGAGAAGCGT
TTTCACGAAAGGCGCAAGACTTTGGATGAAAGATACTTGCATTGACTTCTTTGAGAG
CAACTCAGCACCCGATAGGATTCGAGTTTTCAAAGAACAAGGATGTTGGTCGTACGT
TGGTAGGATCGGGGGTCAGCAAGATCTGTCGCTGGGAAAAGGCTGTGAATCGGTTG
GAACAGCTGCACACGAAATCGGTCATGCTATTGGCTTCTACCACACTCACTCAAGAC
ACGATCGCGATAACTTCATCACATTTAACGCACAAAATGTCAAGCCTGATTGGTTGG
ACCAATTCACCAAGCAGACCCCGGCTACTAATGAGAACTACGGAATTACATACGAC
TACGGAAGTATTATGCACTATGGCGCAAATAGCGCCTCTGCGAATGGACAGCCTTCA
ATGGTTCCGTTTGACCCGAAATACGTAGAAACTCTCGGATCACCCATAATTTCCTTTT
ATGAACTTCTCATGATCAACAAACCCTACGAGTGCACCAAGAATTGCGATCCGAATA
CTTCTGCGCAGTGTAAGATGGGTGGCTTCCCACATCCTCGGGATTGTGGAAGATGCA
TTTGTCCCAGTGGATATGGAGGCCAACTATGCGACCAGAAGCCATCCGGATGCGGA
TCGATCCTCCAAGCGACCGCTCAGTACCAGAACTTGCACGACAAACGTGGAAACGA
AGCAGCAGGGCAGAGACCTAGAGAAGACATGGACTTCTGCTACTACTGGATTACGG
CTCCACAGGGTTCAAGAATCGAAATCAAAATCGCTGATCTATCTCGAGGAGCCGCTG
TTGATGGGTGTCAGTATTGGGGAGTAGAAATTAAGACTCACGCTGACCAGCGCCTCA
CTGGCTACAGGTTCTGTGCTCCAGAAGATGTCGGACGTACATTGGTGTCGAACTCTA
ACATCGTACCAATAATCACATACAATAGATTTTATGCAACCACTGTTGATATCCAGT
ACCGAATCGTTGGTGGTAATGTTGGCGGACCAAGGCCTCAGCCACAACCAAACAGC
AATTGCGTCGACAATGAACAGTGCGCGACCCTCATCAGAACAAAGAATTTCTGTCA
GAGCAGATCGTTCACAGAGTCCGTCAAAAGAGGTCTATGTCCAAAGGCATGCGGTT
TTTGCCGCTAACTTTTCACGAGACAATGAAATAAATATTCGCAGCATCAAAAAAAAA
AAAAAAA

Figure 30 B

B

MRVFLLVLLLAICASAGFFDTKLGEKIKKTLGKIKAALNGTLLMKIREKFIALREKIKAKL
KLSPARKALLGEIMKHIIKIKKDKIQEKGDSIEEINSKSAIGELLYQGDIVLTNKQAQEIVDI
EGDENDRGKRQAFRDRNYPRTLWSKGVYYYFHGNATPEVRSVFTKGARLWMKDTCID
FFESNSAPDRIRVFKEQGCWSYVGRIGGQQDLSLGKGCESVGTAAHEIGHAIGFYHTHSR
HDRDNFITFNAQNVKPDWLDQFTKQTPATNENYGITYDYGSIMHYGANSASANGQPSM
VPFDPKYVETLGSPIISFYELLMINKPYECTKNCDPNTSAQCKMGGFPHPRDCGRCICPSG
YGGQLCDQKPSGCGSILQATAQYQNLHDKRGNEAAGQRPREDMDFCYYWITAPQGSRI
EIKIADLSRGAAVDGCQYWGVEIKTHADQRLTGYRFCAPEDVGRTLVSNSNIVPIITYNF
YATTVDIQYRIVGGNVGGPRPQPQPNSNCVDNEQCATLIRTKNFCQSRSFTESVKRGLCP
KACGFCR*

Figure 31A and B

A

```
   1  GGTTTAATTA CCCAAGTTTG AGATGAAGCT ACTCGCTCTT TCCGCTCTCT
  51  GCGCGCTGGC CTTCGCTGCT CCGCGAGACA AGCGGCTAGC TGTGAGCACT
 101  ATCACTGTCA CTGGAGGACT AGGTCTCTCC ACGGGATGTG TCGTCACTGG
 151  CAACGTTTTG TATGCAAATG GTTTCCGAGT ACGCGAAATT AATCCATCGG
 201  AGCAGCAAGA GTTGGTCAAG TATCAGAACG ACGTAGCCGA ATATAAGACG
 251  GCCCTGAAAC AAGCGATCAA GGAGCGAGAA GAGAAGATCC GAGCCCGTCT
 301  CGCCGGCAAG AAGGTGAAGG CCGTTGAGTC GACCAAAGAA GAGGACCTGC
 351  CGAAGCCGCC ACAGAAGCCG TCATTCTGCA CACCAGAAGA CACTACCCAG
 401  TTCTTCTTTG AAGGATGCAT GATCCAGAAC AACAAGATCT ACGTCGGAAA
 451  CACTTTCGCT CGTGACCTGA CCCAATCTGA AATCGGCGAA CTGAACGAAT
 501  TCGAGAAGAA ATTCAAGGTC TACCAGGACT ACGTTCAGAA GCAGGCCGAA
 551  CAGCAAGTGA ACAGCCTCTT CGGCGGCTCT GACTTCTTCT CGGCACTGTT
 601  CAGCGGCGGT GAGACCAAGC CATCCACGAC CACTGTGGCA CCAGAACTTC
 651  CTGAAGACGC TCCCGAGCAG CCGCCCACGC CCAACTTCTC CACCAGAATA
 701  ATCTAAACGT GGTCTGAATT GTCCACTTAG TTGTTGGATT GGTTGGTTTG
 751  GTGAATAGCG ACTTCGCTTC CCCTCTCGTA CTTACGGTGT CGACTAGCAC
 801  ATTAGTCATG CGTTGCAATA TTTGATCATT GTATTAAGGT ATATTGTACA
 851  TTTATATAAT AAAATTATAT TTCAACTCAA AAAAAAAAAA AAA
```

B

```
   1  MKLLALSALC ALAFAAPRDK RLAVSTITVT GGLGLSTGCV VTGNVLYANG
  51  FRVREINPSE QQELVKYQND VAEYKTALKQ AIKEREEKIR ARLAGKKVKA
 101  VESTKEEDLP KPPQKPSFCT PEDTTQFFFE GCMIQNNKIY VGNTFARDLT
 151  QSEIGELKEF EKKFKVYQDY VQKQAEQQVN SLFGGSDFFS ALFSGGETKP
 201  STTTVAPELP EDAPEQPPTP NFCTRII
```

Figure 32A+B

A

```
  1  GGTTAATTAC CCAAGTTTGA GAATGATTCA ACTGTTGTTG TTAGCGCTAC
 51  TCCCTGTTTG CATCTCAGTG AGGGAACAGT CGATAGCAGT TAAAGGACGC
101  CTTCTGTGCG GTGAtCAACC AGCAGCGAAC GTCAGAGTGA AGTTGTGGGA
151  AGAAGACACA GGACCAGATC CAGATGACCT ACTGGATGCA GGATACACGA
201  ACTCTAATGG TGAATTCCAA CTCCAAGGCG GAACAATAGA GACGACTCCC
251  ATTGATCCCG TCTTGAAAAT TTACCATGAT TGCAATGACG TGACTGGTTT
301  TCTGAGCGTA CCTAAACCTG GCAGCAGAAA AGTGAGGTTC TCCTTACCGG
351  ACAAATACAT CAGCGATGGA ATGGTTCCTA AGAAAGTCAT GGACATCGGT
401  GTTATCA
```

B

```
  1  MIQLLLLALL PVCISVREQS IAVKGRLLCG DQPAANVRVK LMEEDTIPDP
 51  DDLLDAGYTN SNGEFQLQGG TIETTPIDPV LKIYHDCNDV TGFLSVPKPG
101  SPKVRFSLPD KYISDGMVPK KVMDIGVI
```

Figure 33 A&B

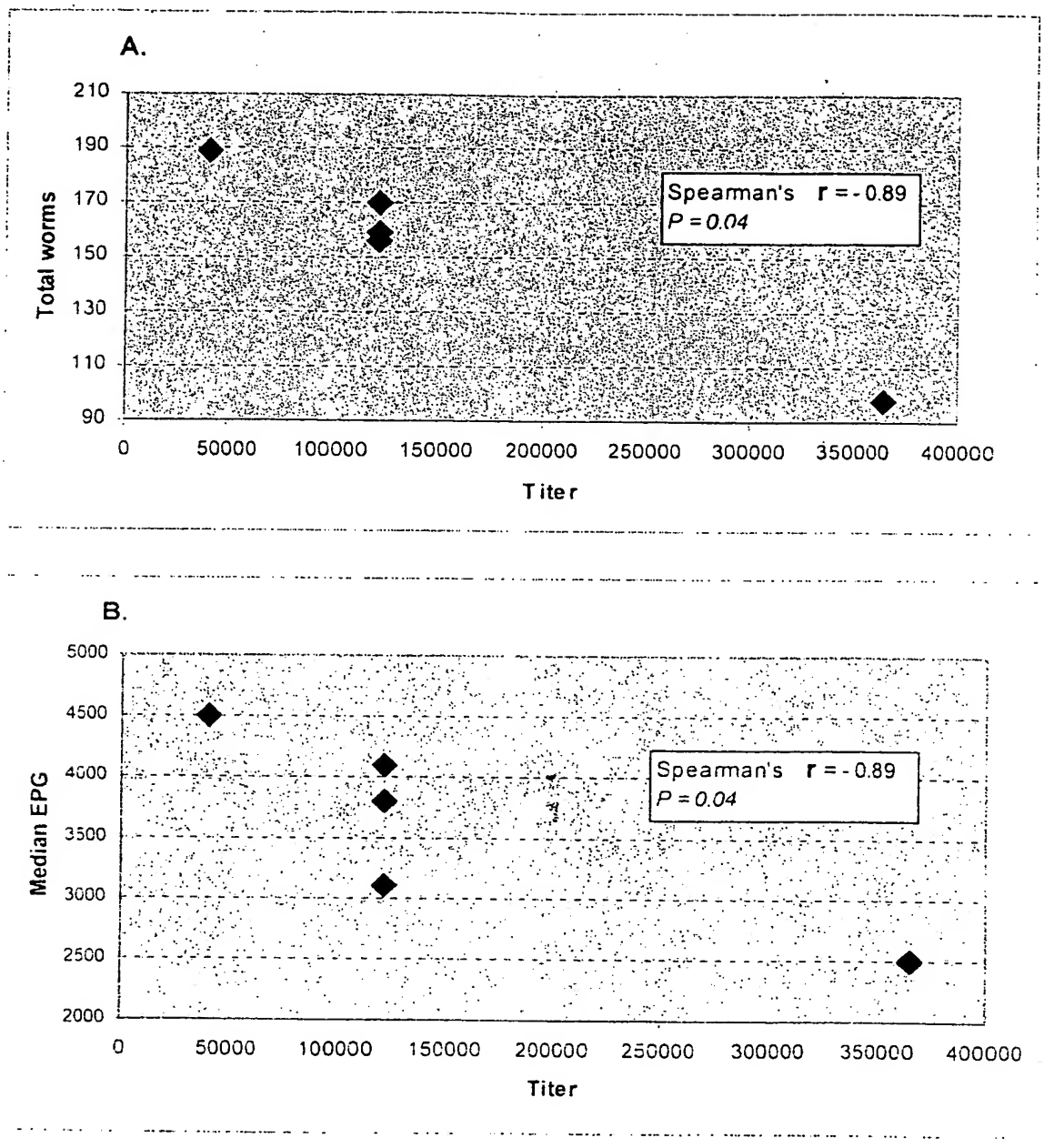
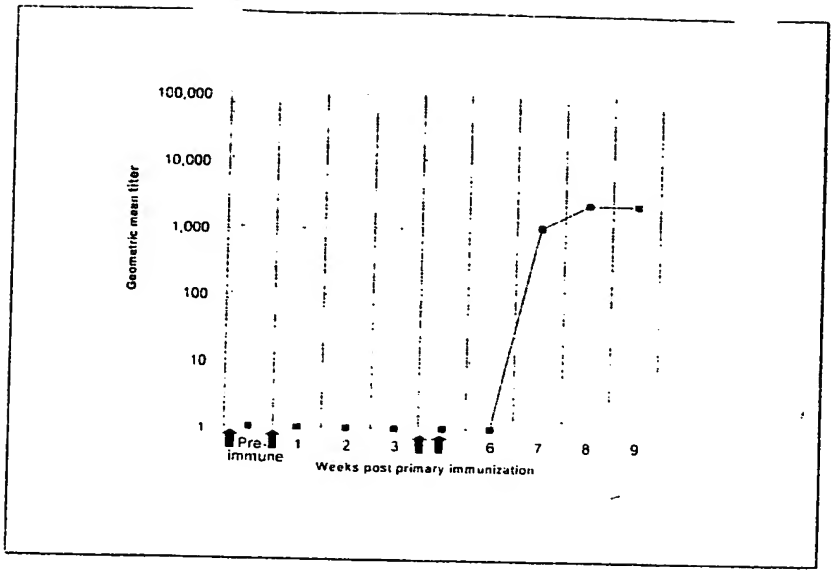
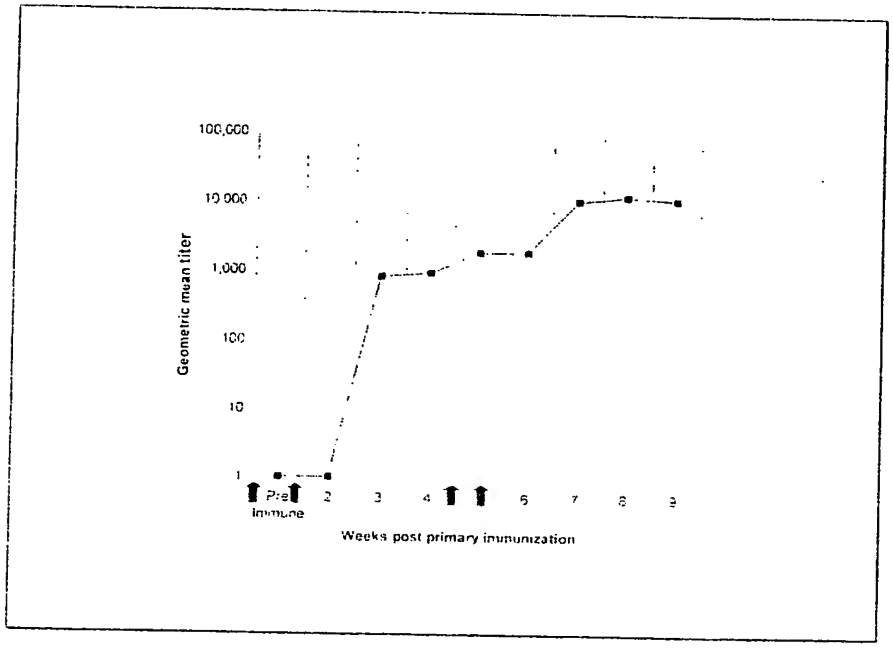

A.
Total worms
210
190
170
150
130
110
90
0
50000
100000
150000
200000
250000
300000
350000
400000
Titer
Spearman's r = - 0.89
P = 0.04
B.
Median EPG
5000
4500
4000
3500
3000
2500
2000
0
50000
100000
150000
200000
250000
300000
350000
400000
Titer
Spearman's r = - 0.89
P = 0.04

Figure 34 A-C

A



B



C

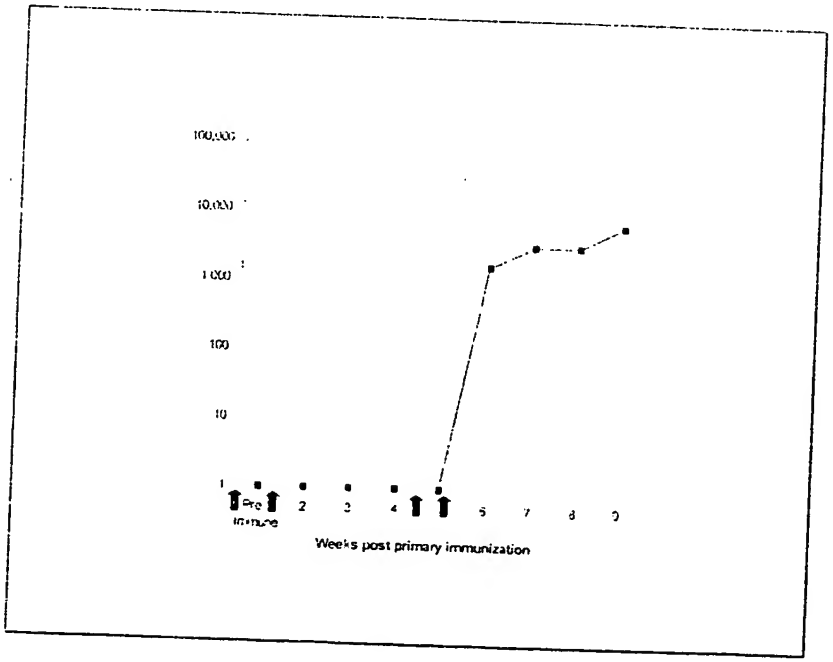
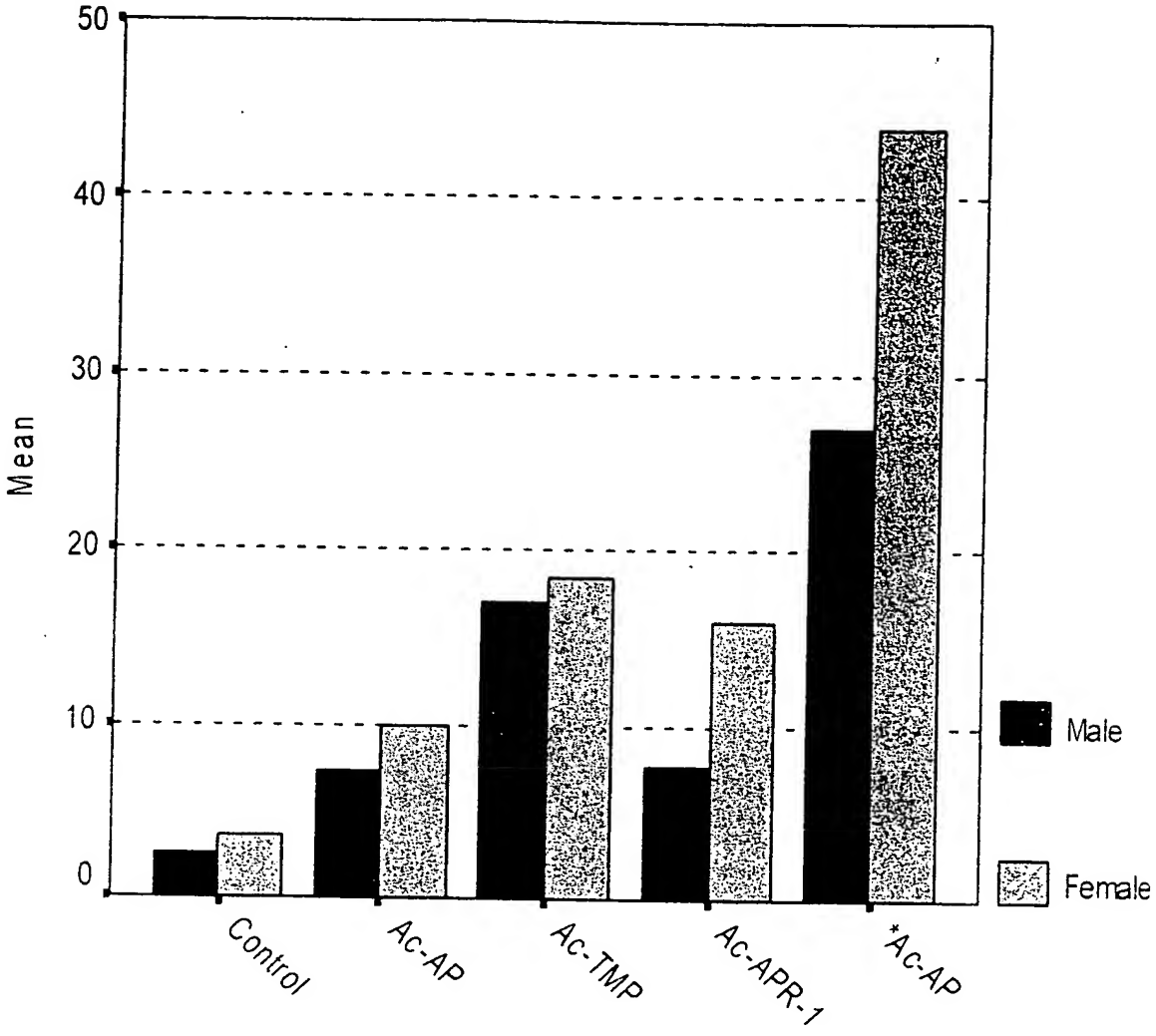
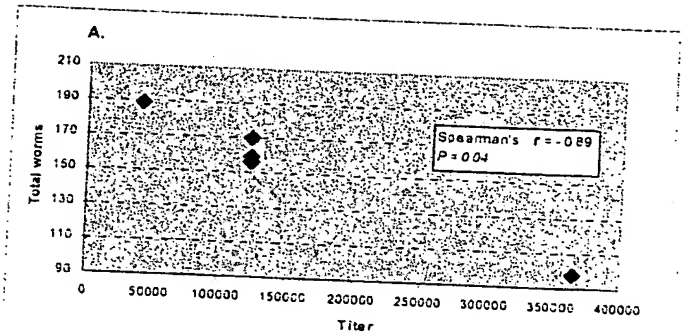


Figure 35



*Positive immune response

Figure 36 A+B


A.
Total worms
210
190
170
150
130
110
90
0
50000
100000
150000
200000
250000
300000
350000
400000
Titer
Spearman's r = -0.89
P = 0.04

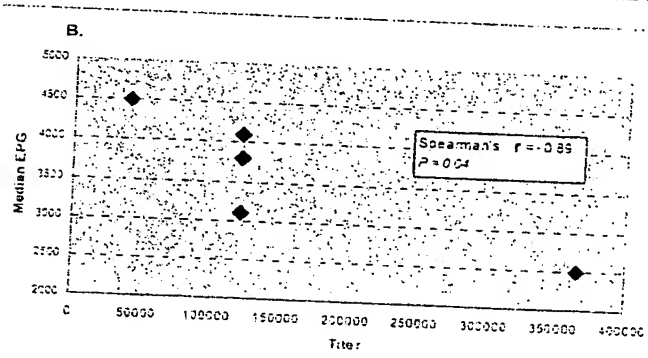
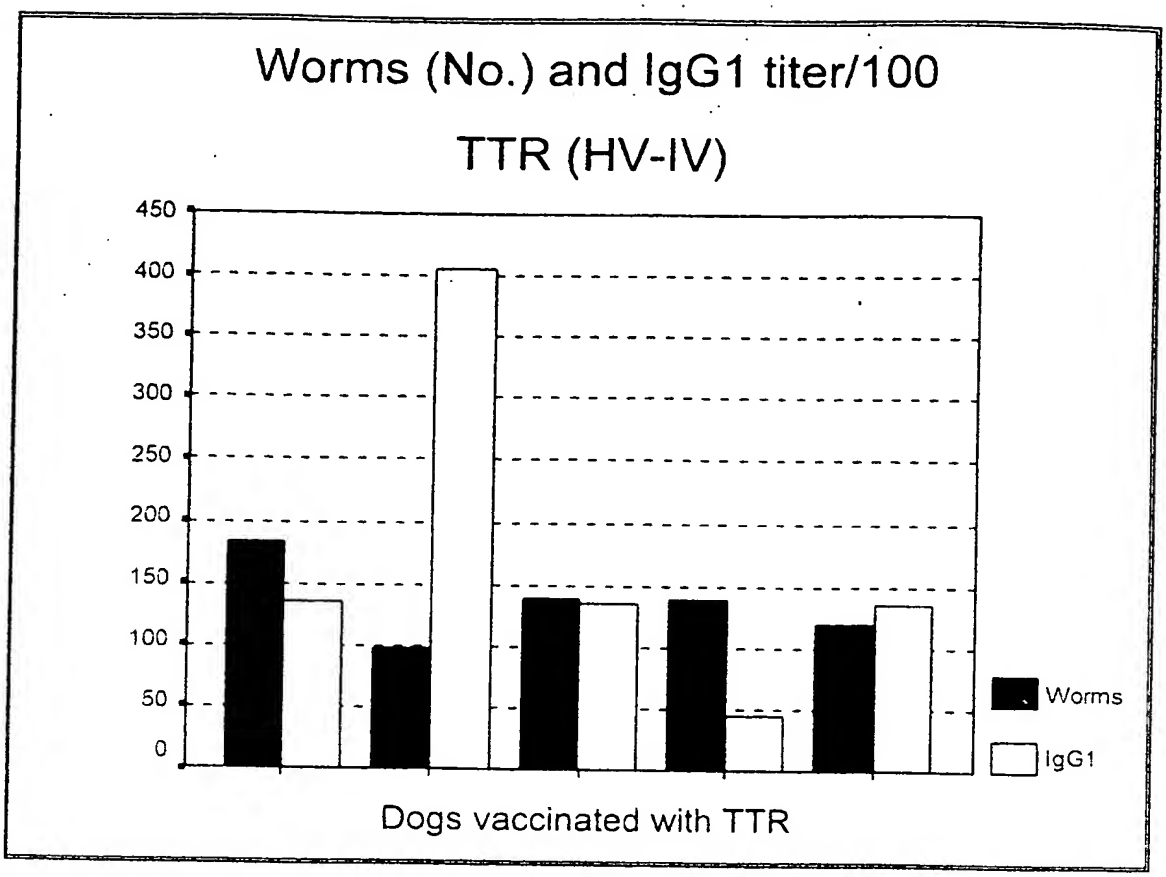

B.
Median EPG
5000
4500
4000
3500
3000
2500
2000
0
50000
100000
150000
200000
250000
300000
350000
400000
Titer
Spearman's r = -0.89
P = 0.04

Figure 37 A+B

A



B

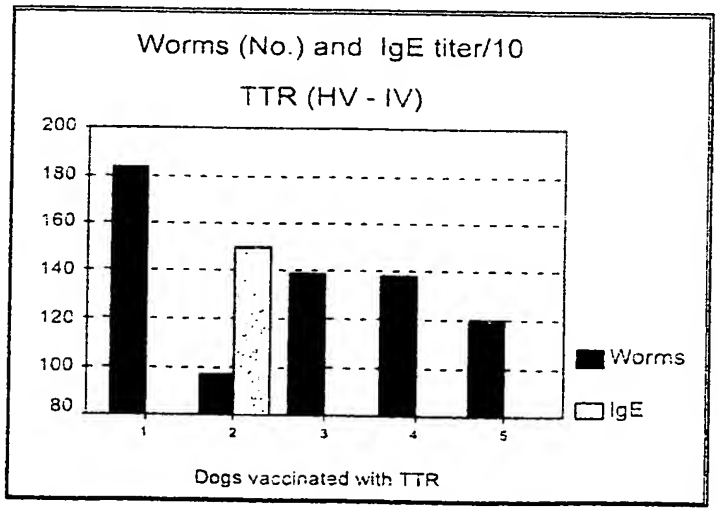
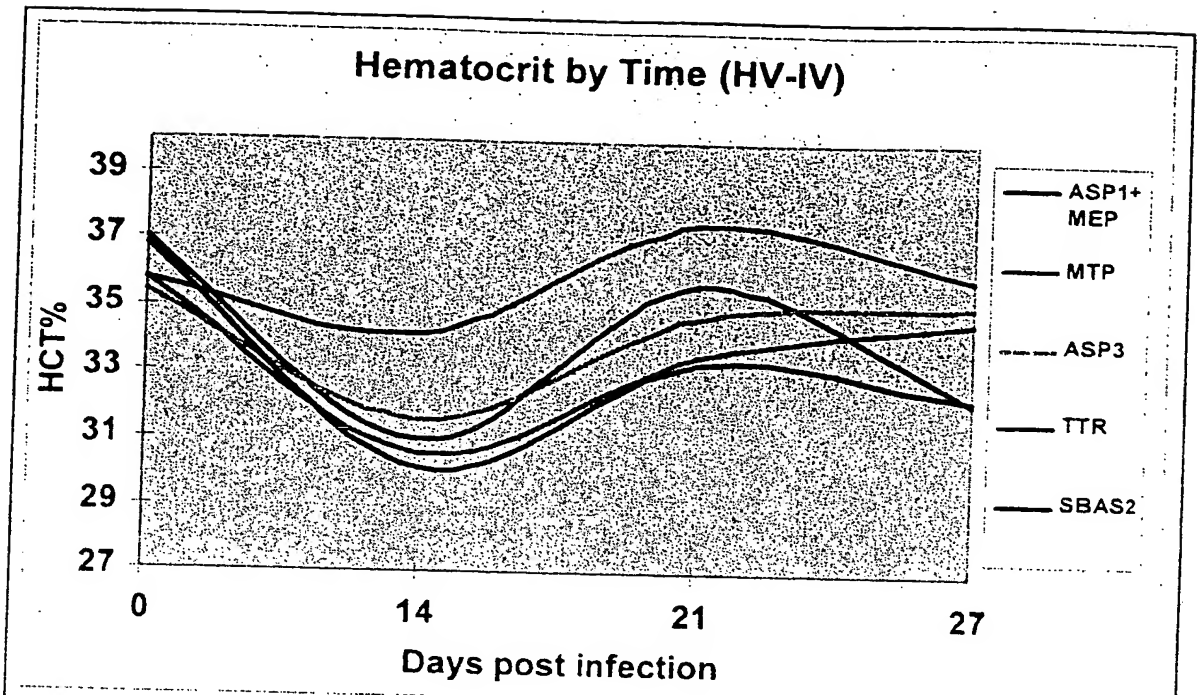


Figure 38 A+B

A



B

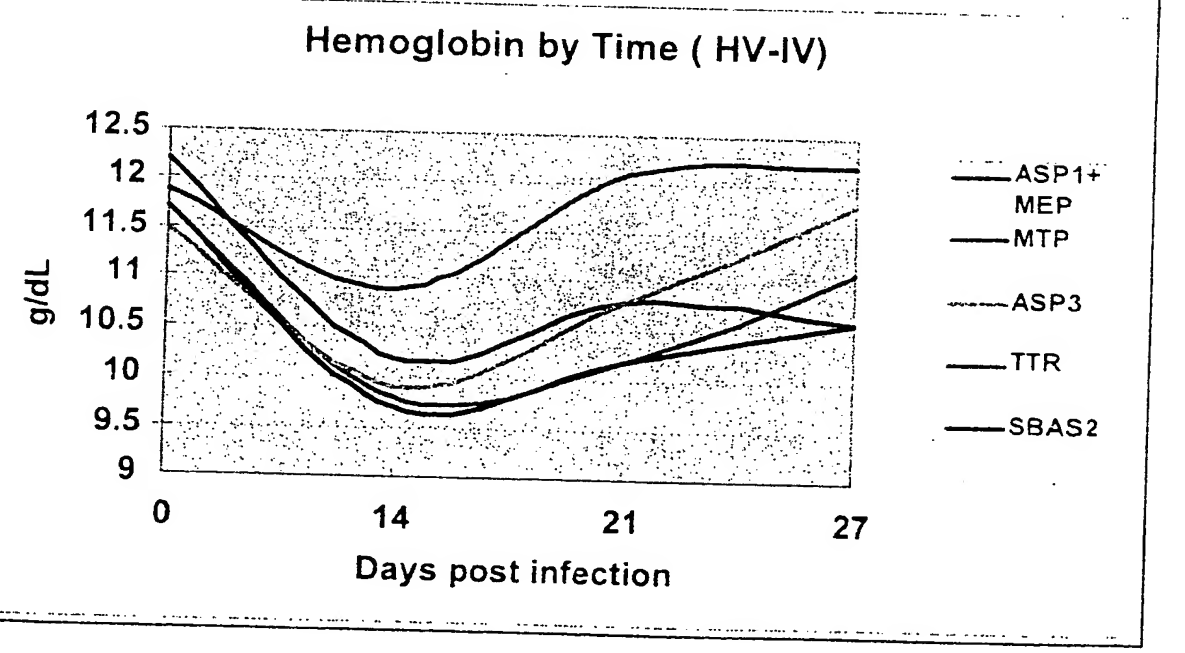


Figure 39

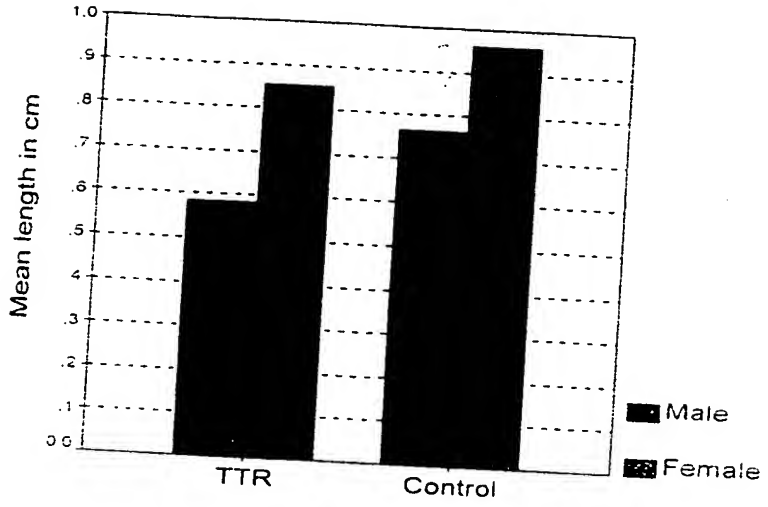
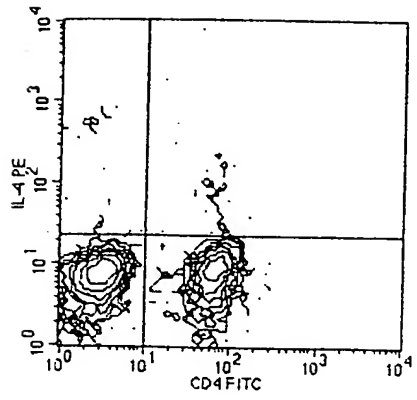
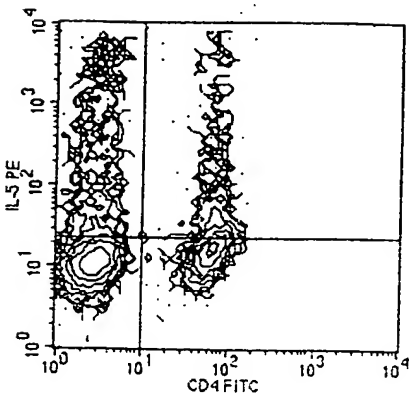


Figure 40

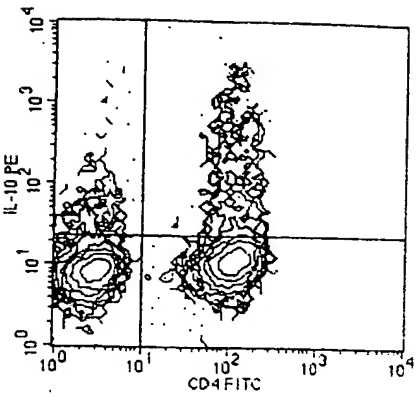
IL-4



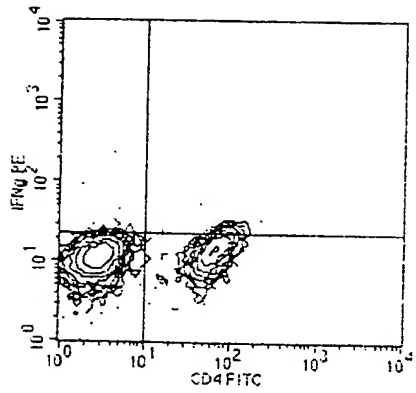
IL-5



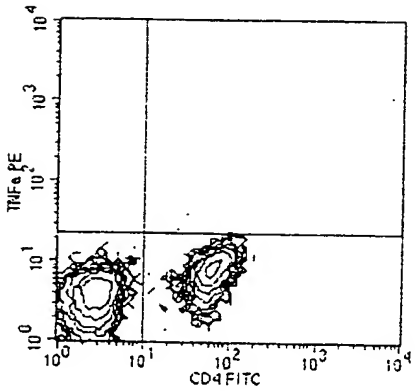
IL-10



INFγ



TNFα



IL-13

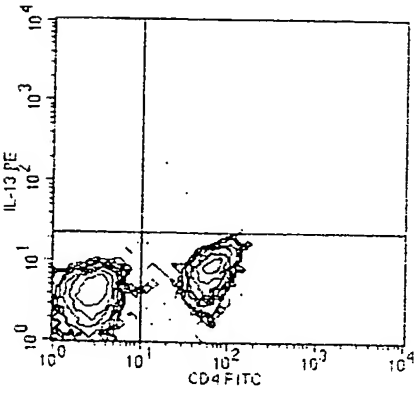
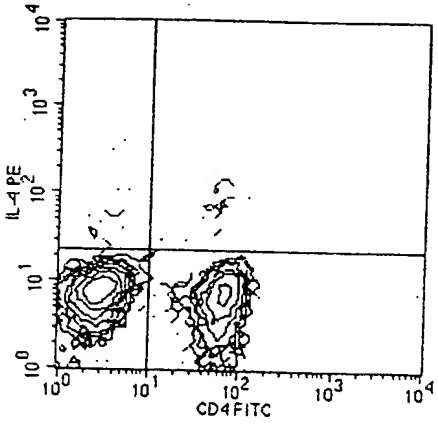
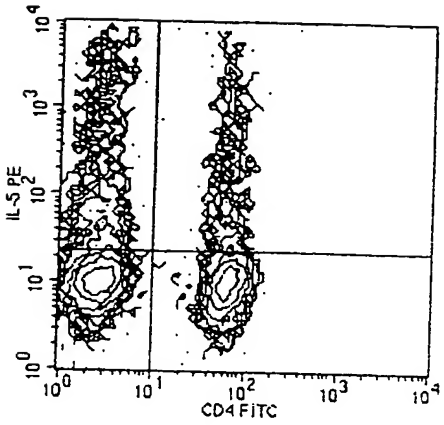


Figure 41

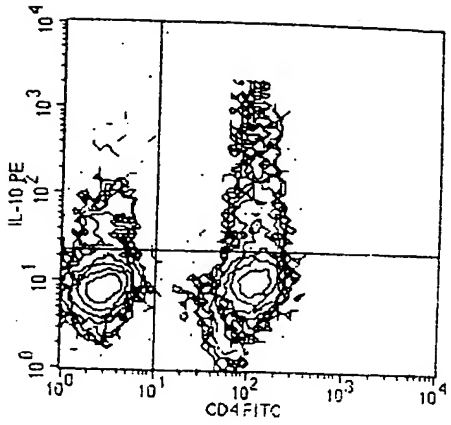
IL-4



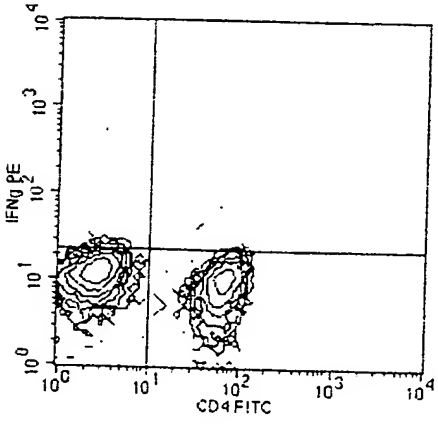
IL-5



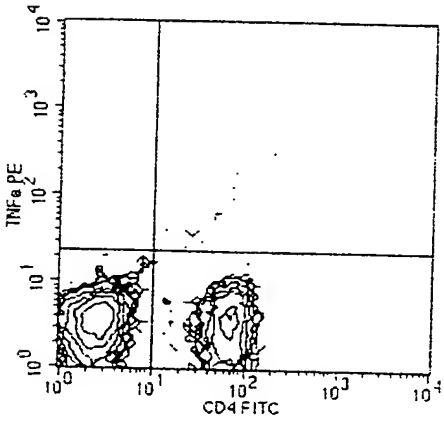
IL-10



INFγ



TNFα



IL-13

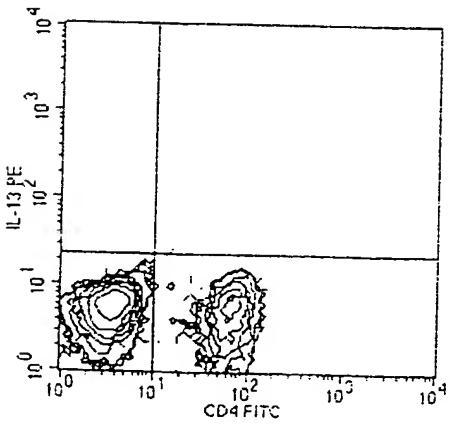
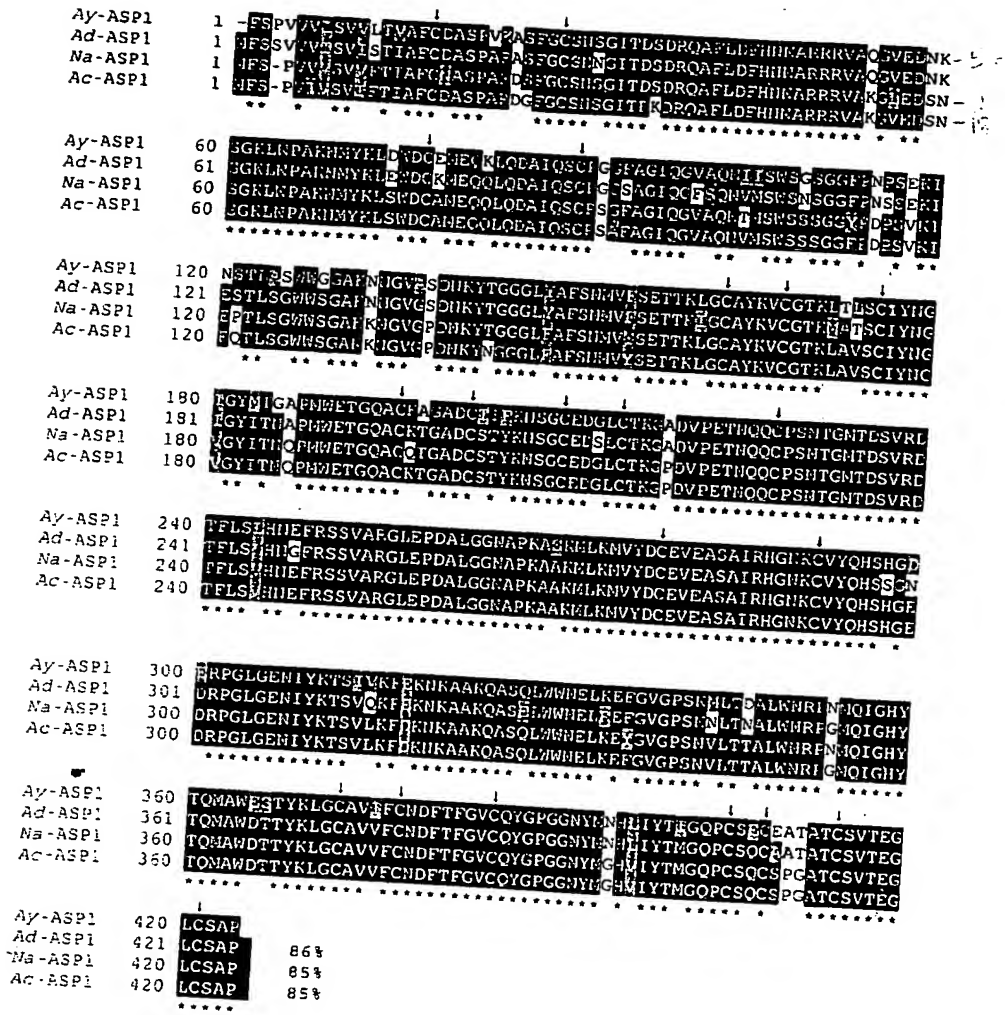
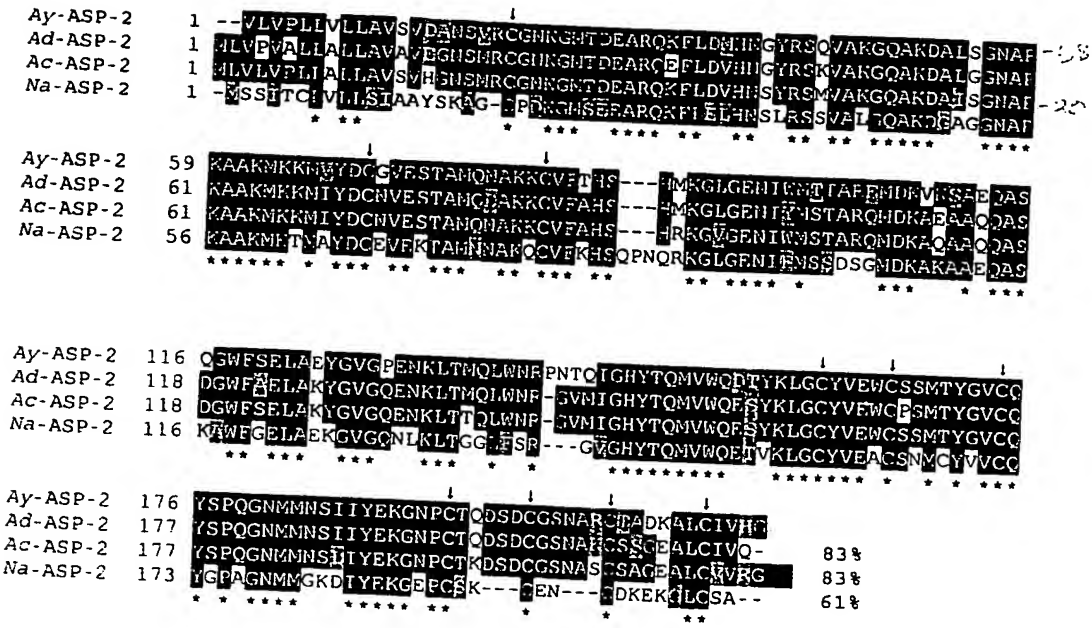


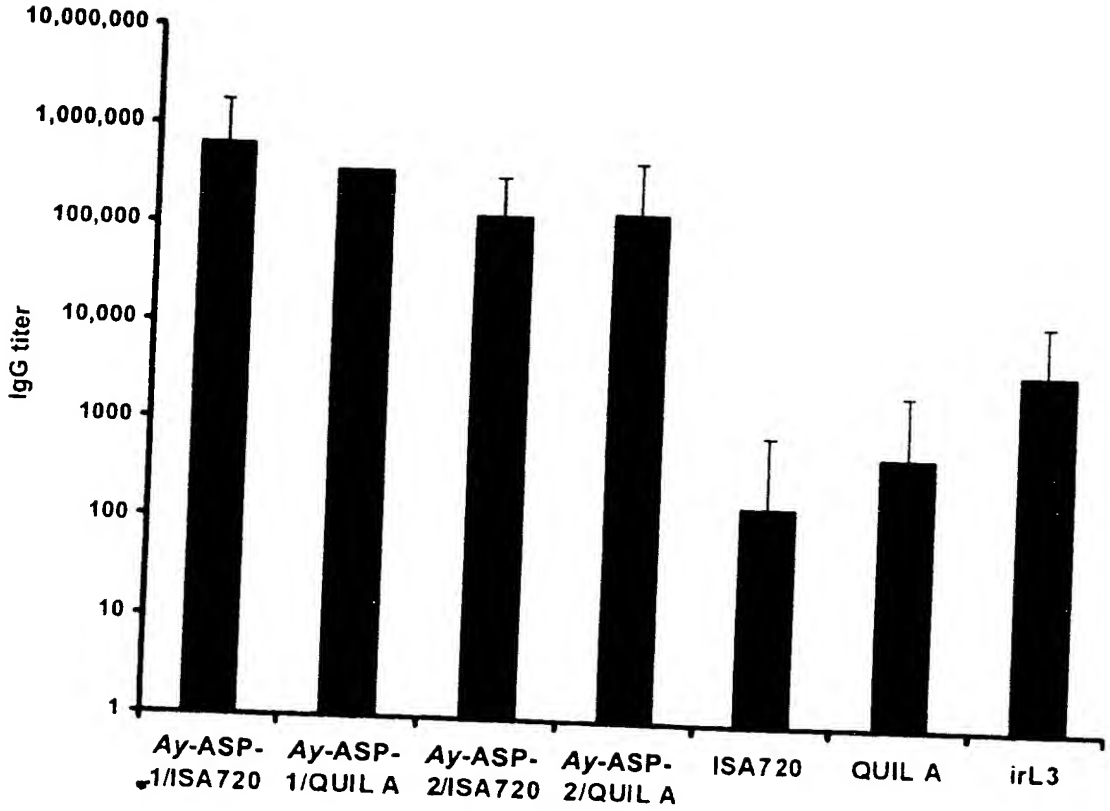
Figure 4B






```
   1 gaaaatcaca atgatgtctt ctatcacatg tttggttctt ctctcgattg cagcgtactc
  61 caaagccggt tgtcctgaca atggaatgtc agaggaagca cggcaaaaat tccttgaatt
 121 gcacaattcg ttgagaagtt cggttgcatt gggacaggcc aaggatggag ctggtggaaa
 181 tgccccgaaa gctgctaaga tgaagacgat ggcatacgat tgcgaagttg aaaagactgc
 241 aatgaataac gcgaaacaat gtgtattcaa gcactcgcaa cctaaccaaa ggaaaggatt
 301 gggagagaat atatttatgt cttcggatag cggtatggac aaagcaaagg ctgctgagca
 361 ggctagcaaa gcttggttcg gcgaacttgc agaaaaagga gttggacaga atcttaagct
 421 tacaggaggc ttgttcagca gaggagtcgg gcactataca cagatggtat ggcaagaaac
 481 cgttaagctt ggatgctatg tggaagcgtg ctcaaatatg tgttatgtgg tgtgccagta
 541 cggtcctgct ggaaatatga tgggcaagga tatctacgag aaaggagaac cgtgttcgaa
 601 atgtgagaat tgcgacaagg agaagggact ctgcagtgct tgattagttg tgttcagtga
 661 agctcattac gctcacatac tttaacaaat cgtagtgatc tgtagttgct ttaatattca
 721 aataaacatg atgccagcaa aaaaaaaaaa aaa
```

Figure 4A


10,000,000
1,000,000
100,000
10,000
1000
100
10
1
IgG titer
Ay-ASP-1/ISA720
Ay-ASP-1/QUIL A
Ay-ASP-2/ISA720
Ay-ASP-2/QUIL A
ISA720
QUIL A
irL3

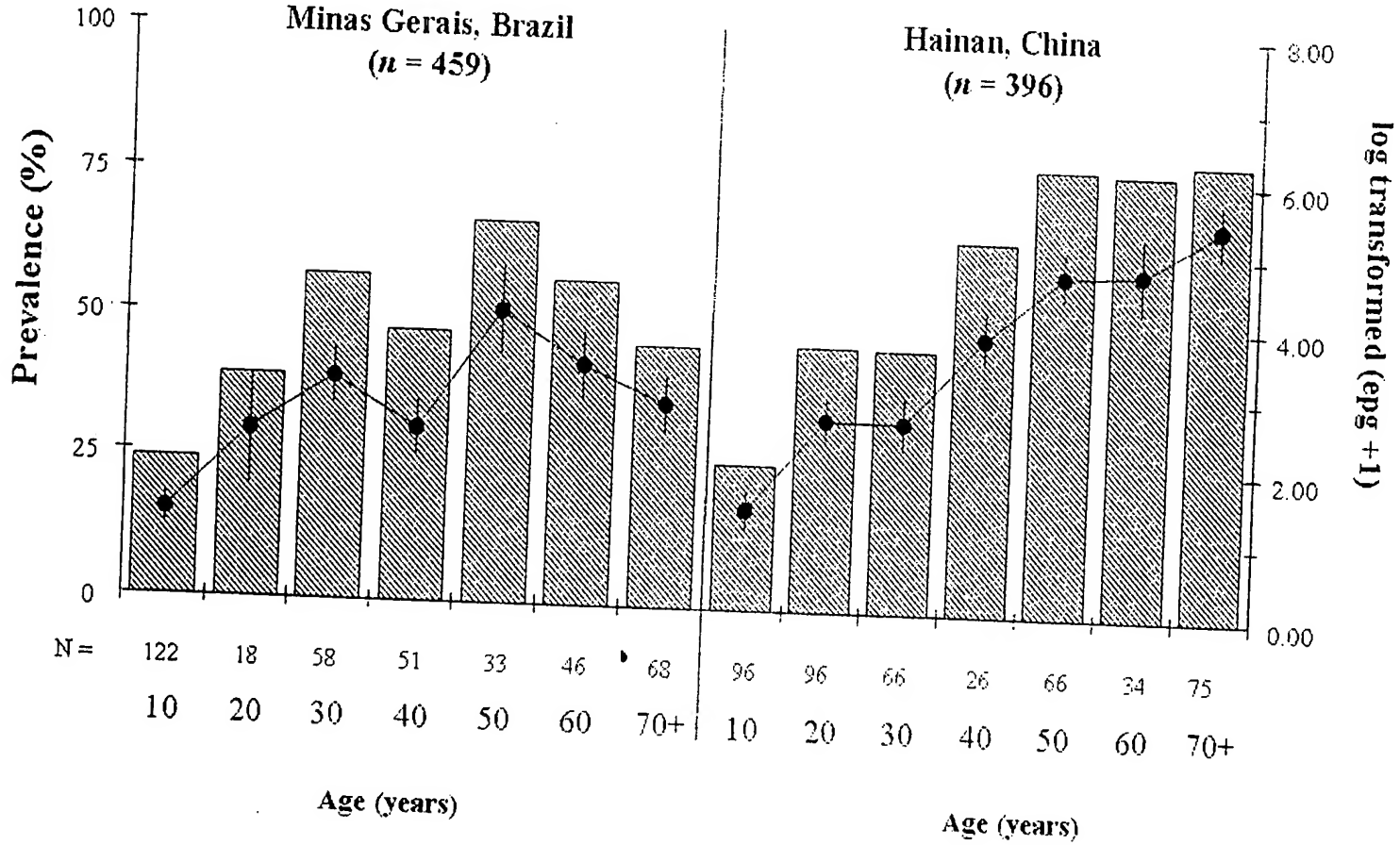

Minas Gerais, Brazil
(n = 459)
Hainan, China
(n = 396)
Prevalence (%)
log transformed (epg +1)
100
75
50
25
0
8.00
6.00
4.00
2.00
0.00
N =
122 18 58 51 33 46 68
96 96 66 26 66 34 75
10 20 30 40 50 60 70+
10 20 30 40 50 60 70+
Age (years)
Age (years)

Figure 16

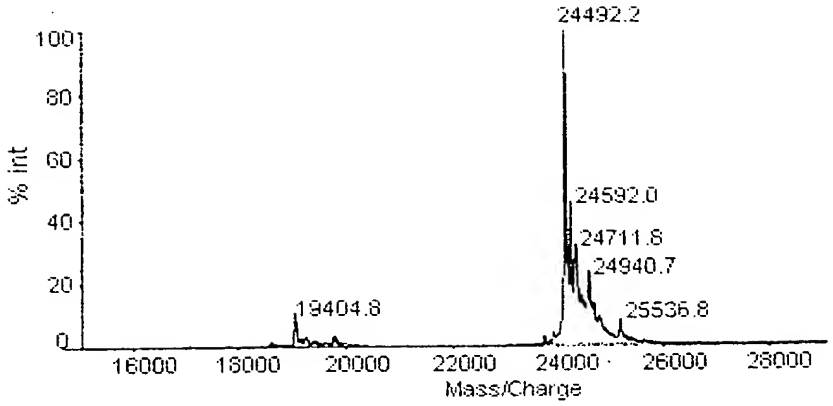
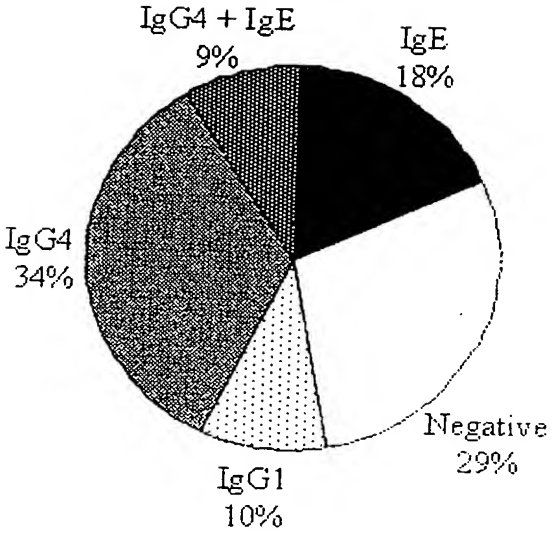
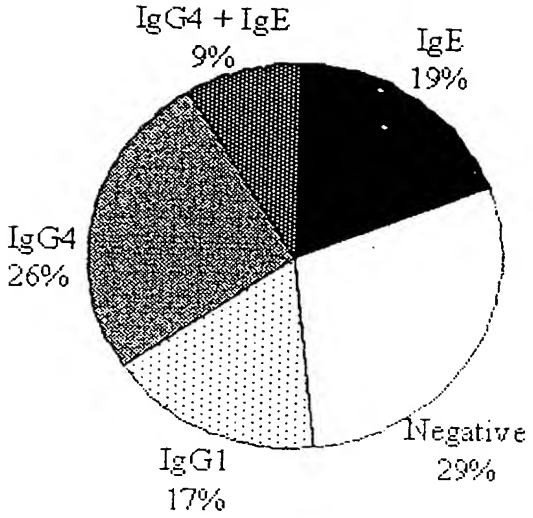

24492.2
100
80
60
40
20
0
% int
24592.0
24711.8
24940.7
19404.8
25536.8
16000
18000
20000
22000
24000
26000
28000
Mass/Charge

Figure 47



China
($n = 245$)



Brazil
($n = 257$)

Figure 48

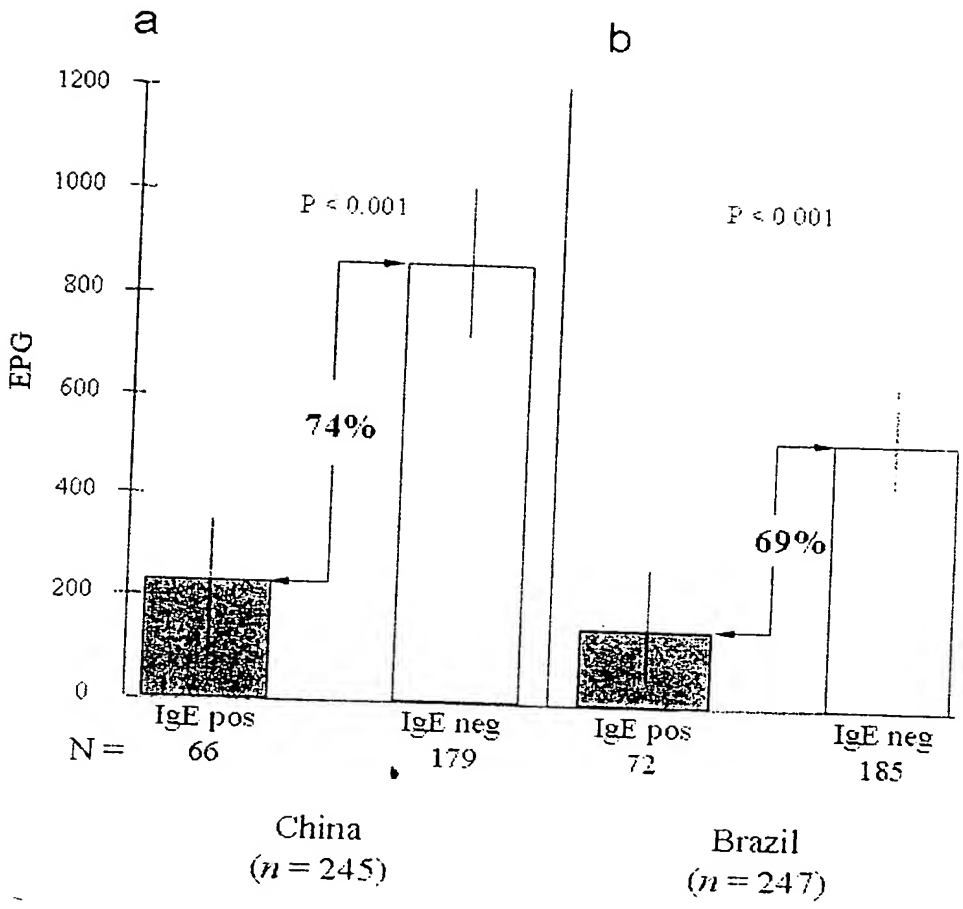
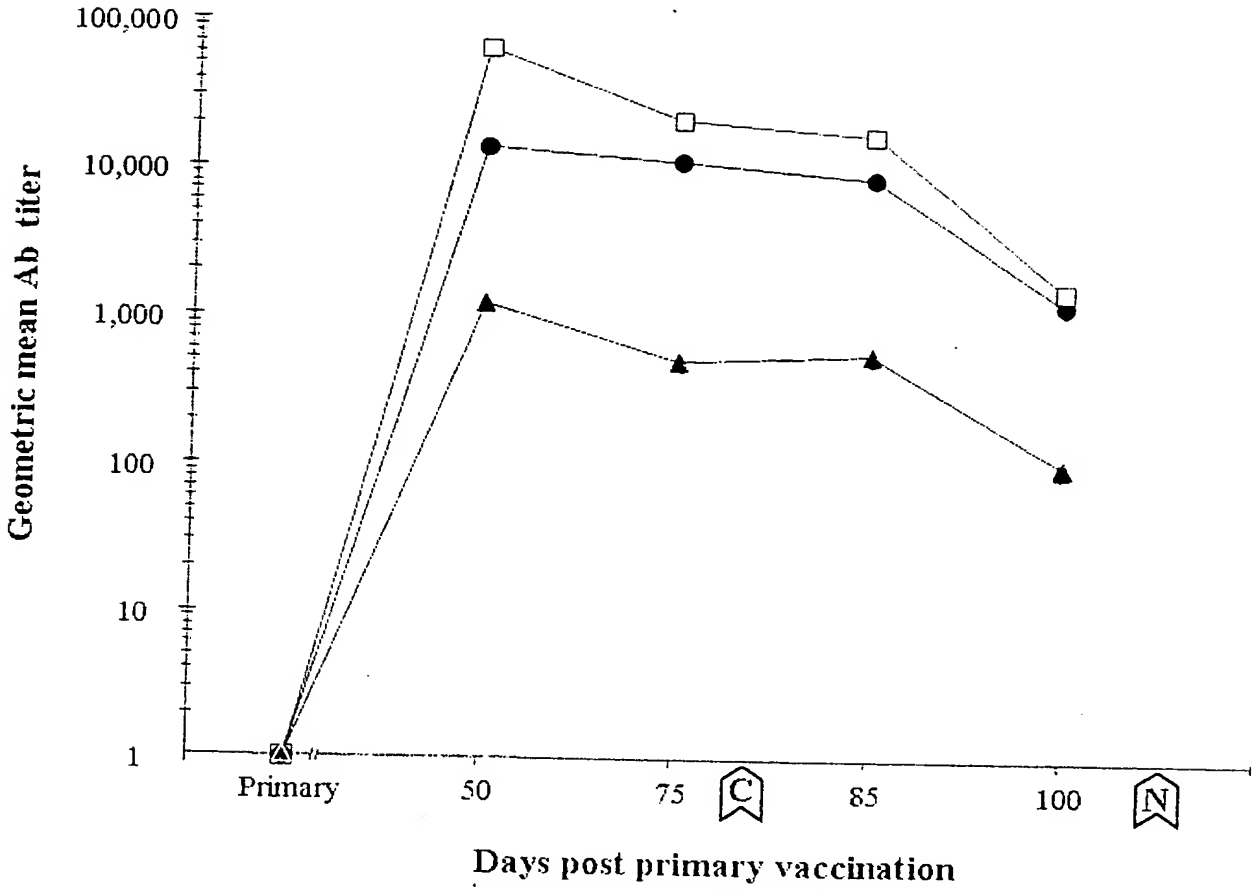

a
b
1200
1000
800
600
400
200
0
EPG
P < 0.001
P < 0.001
74%
69%
IgE pos
IgE neg
IgE pos
IgE neg
N =
66
179
72
185
China
(n = 245)
Brazil
(n = 247)

Figure 19


100,000
10,000
1,000
100
10
1
Geometric mean Ab titer
Primary
50
75
C
85
100
N
Days post primary vaccination

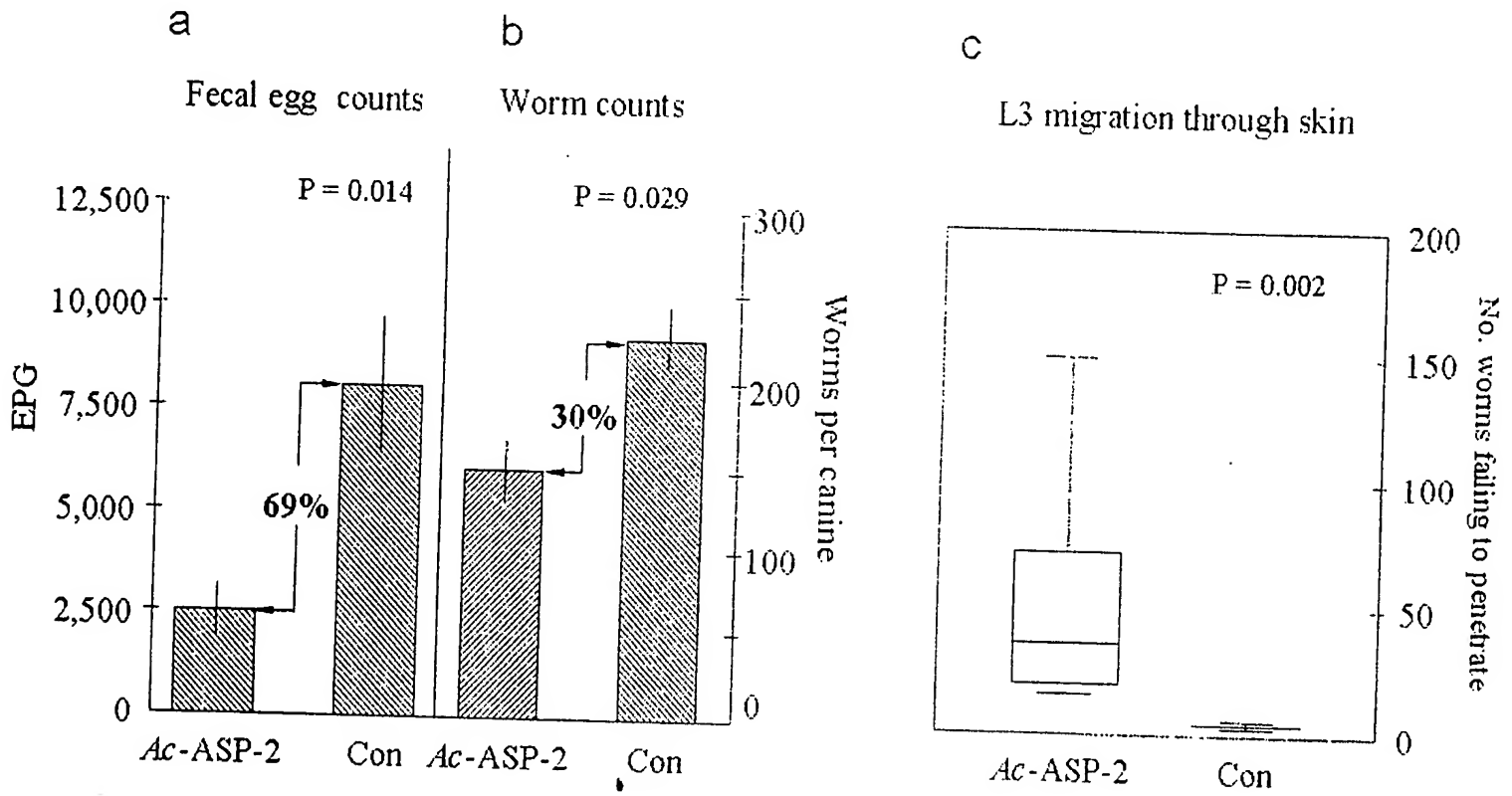

a
Fecal egg counts
P = 0.014
12,500
10,000
7,500
5,000
2,500
0
EPG
69%
Ac-ASP-2
Con
b
Worm counts
P = 0.029
300
200
100
0
Worms per canine
30%
Ac-ASP-2
Con
c
L3 migration through skin
P = 0.002
200
150
100
50
0
No. worms failing to penetrate
Ac-ASP-2
Con

Figure 5F

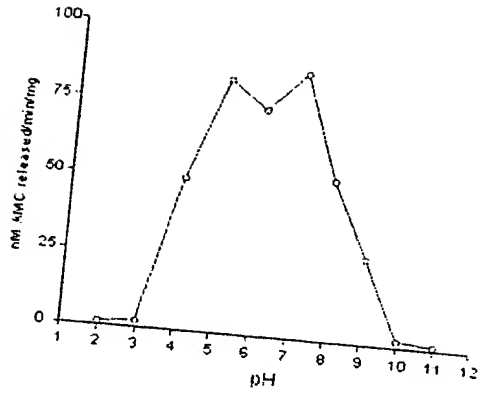
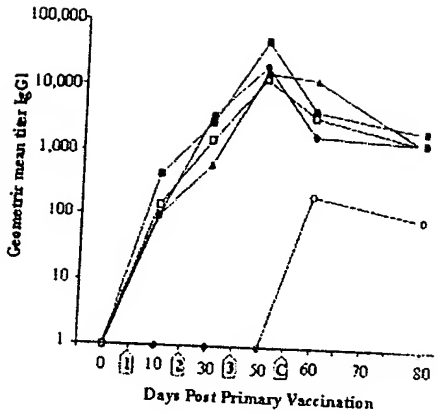


Figure 52

A


100,000
10,000
1,000
100
10
1
Geometric mean titer IgG1
0
1
10
2
30
3
50
C
60
70
80
Days Post Primary Vaccination

B

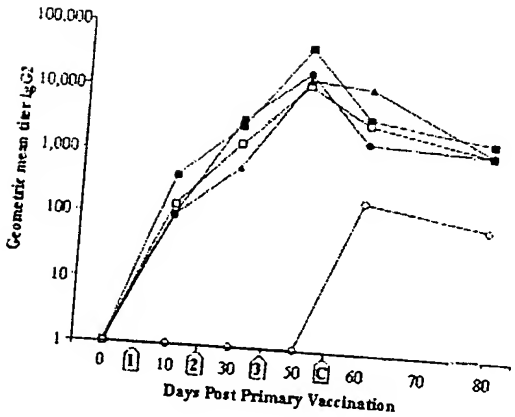

100,000
10,000
1,000
100
10
1
Geometric mean titer IgG2
0
1
10
2
30
3
50
C
60
70
80
Days Post Primary Vaccination

Figure 53.

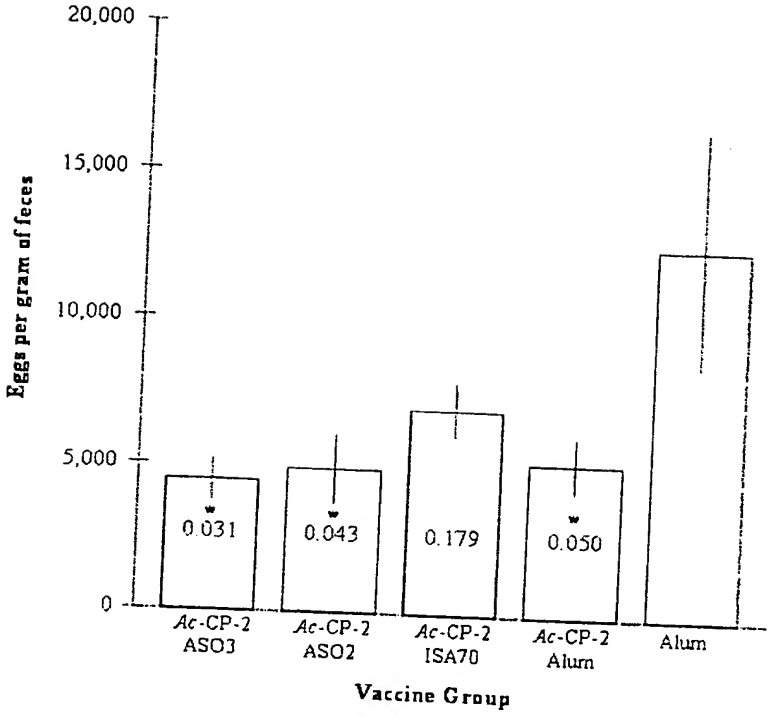

20,000
15,000
10,000
5,000
0
Eggs per gram of feces
0.031
0.043
0.179
0.050
Ac-CP-2 ASO3
Ac-CP-2 ASO2
Ac-CP-2 ISA70
Ac-CP-2 Alum
Alum
Vaccine Group

Figure 54

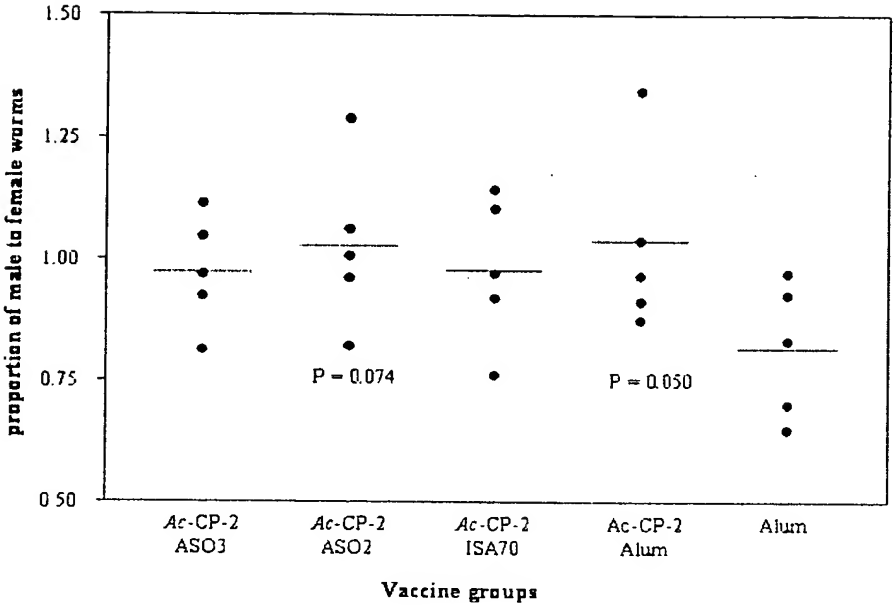

1.50
1.25
1.00
0.75
0 50
proportion of male to female worms
P = 0.074
P = 0.050
Ac-CP-2 ASO3
Ac-CP-2 ASO2
Ac-CP-2 ISA70
Ac-CP-2 Alum
Alum
Vaccine groups

Figure 55

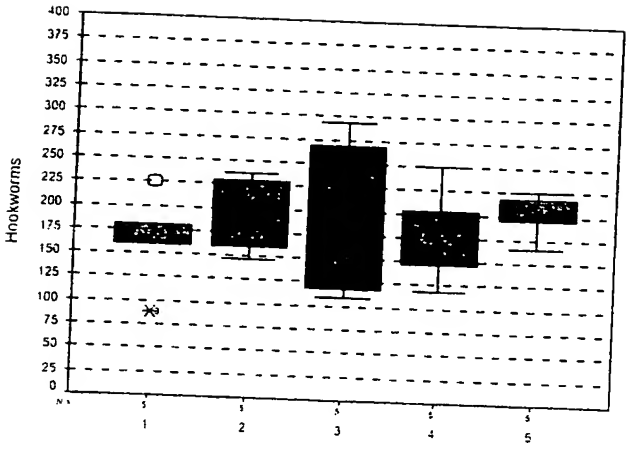

Hookworms
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
1
2
3
4
5

Figure 6

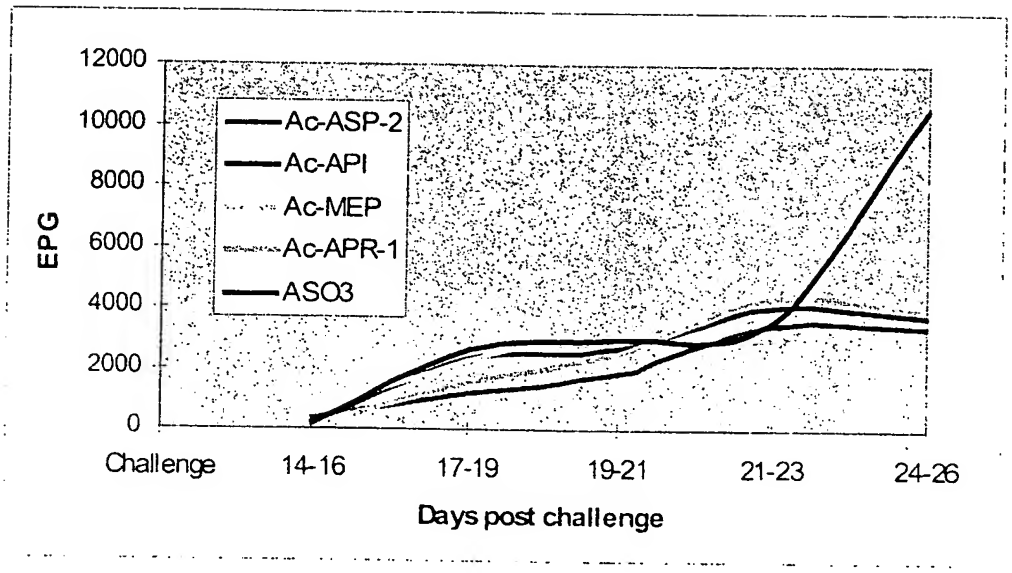

12000
10000
8000
6000
4000
2000
0
EPG
Ac-ASP-2
Ac-API
Ac-MEP
Ac-APR-1
ASO3
Challenge
14-16
17-19
19-21
21-23
24-26
Days post challenge

Figure 5+

A.

```
GAAAGGTTTAATTACCCAAGTTTGAGGTGTAAAAATGGTCCACTACAAGCTGACCTACTT
CAACGGACGTGGCCTCGGCGAATGCGCGCGTCAGTTGTTCGCTCTTGCTGACCAACAATA
TGAGGATATTCGTGTTACACATGAGGATTTCCCCGAGATAAAACCAAATTTGCCATTTGG
ACAACTGCCGCTGCTTAACGAGGATGGTAAAGAACTCGCTCAGTCAAACGCCATCAATCG
TTACCTGGCTAGGAAATTCGGATTCGCTGGCAAAACGCCATTTGAGGAGGCTCTAGTGGA
CTCGCTGGCAGATCAGATGACGGACTACCGTGTAGAAATAAAACCATTCGTCTACACAGC
GTATGGACATCAGAAATTCGGTGACCTGGAGACGCTAAAAAAGGATGTGATGCTTCCTGC
ACGAGACAAGTTCCTCGGTTTCATCACCAAATTCTTAAAGAACAACCCATCAGGATTCTT
GGTTGGTGACTCGGTGACTTGGATAGATCTATTGCTCGCTGAACATGCTTCCGACATACA
GTCAAAGGTCCCCGAATACCTCGAAGGGTTTCCTGAGGTGAAGGCTCATATGGAAAAGGT
GCGATCTATTCCGAAACTGAAAAAATGGATCGAGACCAGACCGGAGACTCACTTCTGATC
GATACGCGGGATTTTTTC
```

B

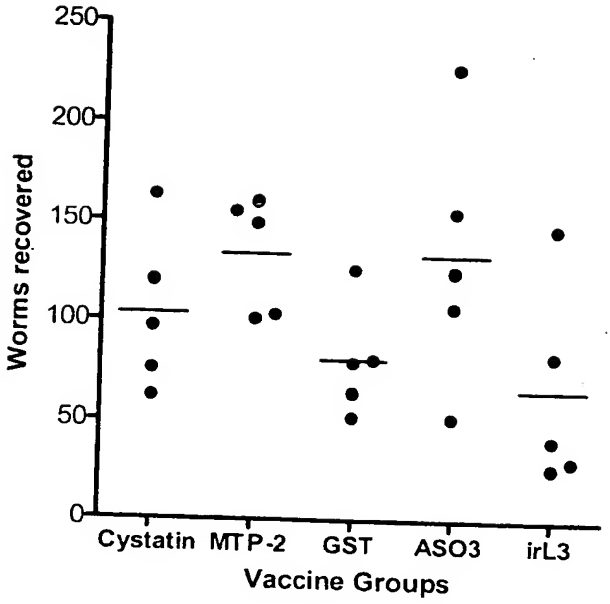
```
MVHYKLTYFNGRGLGECARQLFALADQQYEDIRVTHEDFPEIKPNLPFGQLPLLNEDGKE
LAQSNAINRYLARKFGFAGKTPFEEALVDSLADQMTDYRVEIKPFVYTAYGHQKFGDLET
LKKDVMLPARDKFLGFITKFLKNNPSGFLVGDSVTWIDLLLAEHASDIQSKVPEYLEGFP
EVKAHMEKVPSIPKLKKWIETRPETHF*
```

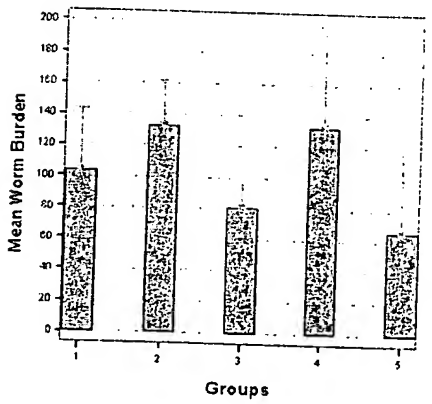
C

```
GAAAGGTTTAATTACCCAAGTTTGAGGTGTAAAAATGGTCCACTACAAGCTGACCTACTT    60
                                    M  V  H  Y  K  L  T  Y  F     9
CAACGGACGTGGCCTCGGCGAATGCGCGCGTCAGTTGTTCGCTCTTGCTGACCAACAATA   120
  N  G  R  G  L  G  E  C  A  R  Q  L  F  A  L  A  D  Q  Q  Y    29
TGAGGATATTCGTGTTACACATGAGGATTTCCCCGAGATAAAACCAAATTTGCCATTTGG   180
  E  D  I  R  V  T  H  E  D  F  P  E  I  K  P  N  L  P  F  G    49
ACAACTGCCGCTGCTTAACGAGGATGGTAAAGAACTCGCTCAGTCAAACGCCATCAATCG   240
  Q  L  P  L  L  N  E  D  G  K  E  L  A  Q  S  N  A  I  N  R    69
TTACCTGGCTAGGAAATTCGGATTCGCTGGCAAAACGCCATTTGAGGAGGCTCTAGTGGA   300
  Y  L  A  R  K  F  G  F  A  G  K  T  P  F  E  E  A  L  V  D    89
CTCGCTGGCAGATCAGATGACGGACTACCGTGTAGAAATAAAACCATTCGTCTACACAGC   360
  S  L  A  D  Q  M  T  D  Y  R  V  E  I  K  P  F  V  Y  T  A   109
GTATGGACATCAGAAATTCGGTGACCTGGAGACGCTAAAAAAGGATGTGATGCTTCCTGC   420
  Y  G  H  Q  K  F  G  D  L  E  T  L  K  K  D  V  M  L  P  A   129
ACGAGACAAGTTCCTCGGTTTCATCACCAAATTCTTAAAGAACAACCCATCAGGATTCTT   480
  R  D  K  F  L  G  F  I  T  K  F  L  K  N  N  P  S  G  F  L   149
GGTTGGTGACTCGGTGACTTGGATAGATCTATTGCTCGCTGAACATGCTTCCGACATACA   540
  V  G  D  S  V  T  W  I  D  L  L  L  A  E  H  A  S  D  I  Q   169
GTCAAAGGTCCCCGAATACCTCGAAGGGTTTCCTGAGGTGAAGGCTCATATGGAAAAGGT   600
  S  K  V  P  E  Y  L  E  G  F  P  E  V  K  A  H  M  E  K  V   189
GCGATCTATTCCGAAACTGAAAAAATGGATCGAGACCAGACCGGAGACTCACTTCTGATC   660
  R  S  I  P  K  L  K  K  W  I  E  T  R  P  E  T  H  F  *      207
GATACGCGGGATTTTTTC                                             678
```

Figure 5C

A


250
200
150
100
50
0
Worms recovered
Cystatin
MTP-2
GST
ASO3
irL3
Vaccine Groups


Mean Worm Burden
Groups

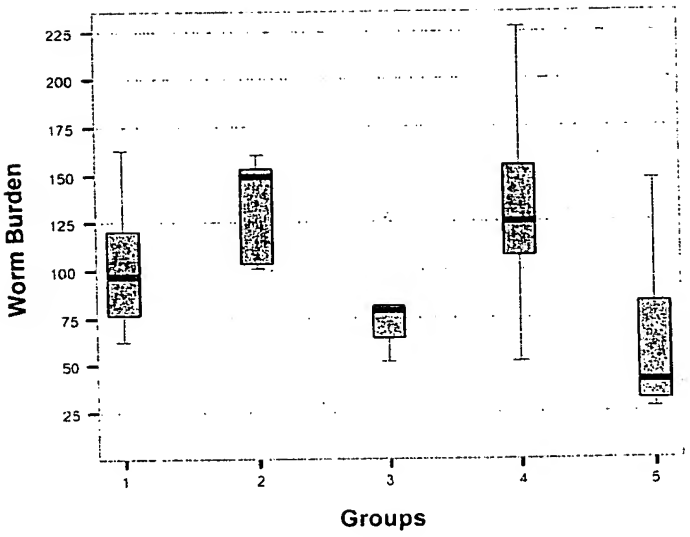
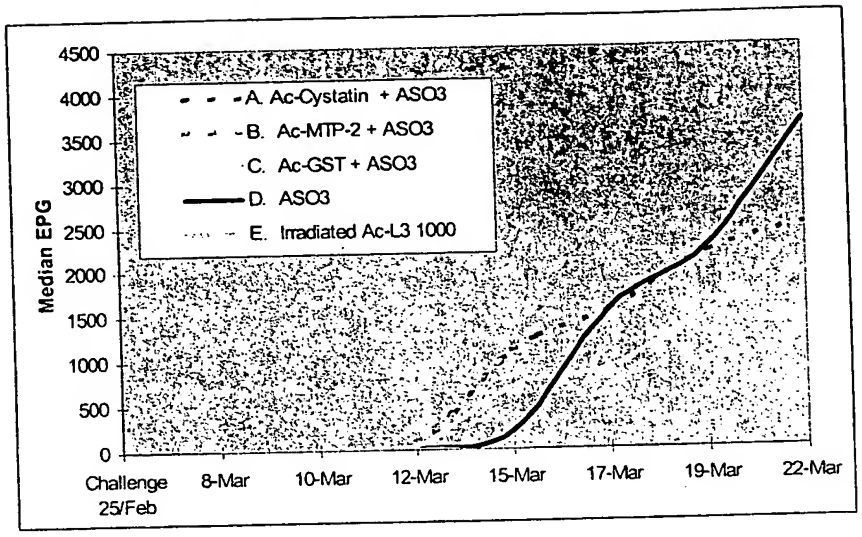

Worm Burden
225
200
175
150
125
100
75
50
25
1
2
3
4
5
Groups

Figure 6C

A


Median EPG
4500
4000
3500
3000
2500
2000
1500
1000
500
0
A. Ac-Cystatin + ASO3
B. Ac-MTP-2 + ASO3
C. Ac-GST + ASO3
D. ASO3
E. Irradiated Ac-L3 1000
Challenge 25/Feb
8-Mar
10-Mar
12-Mar
15-Mar
17-Mar
19-Mar
22-Mar

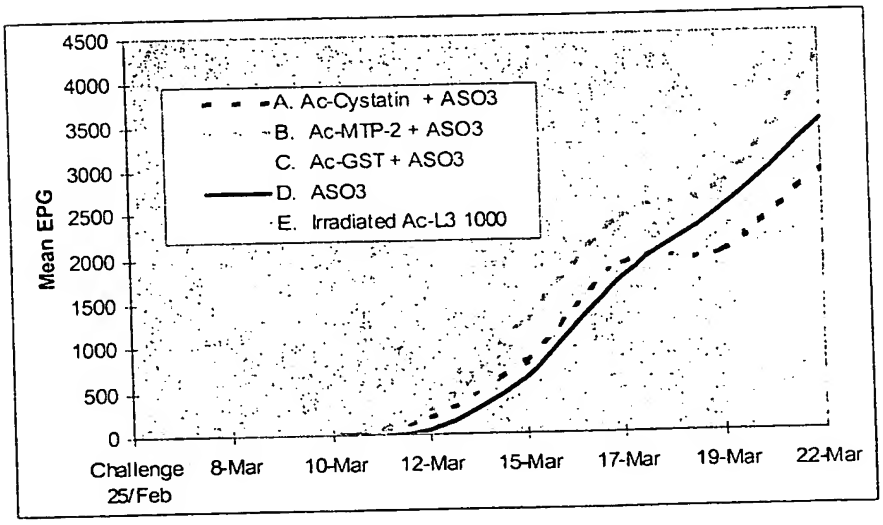

Mean EPG
4500
4000
3500
3000
2500
2000
1500
1000
500
0
A. Ac-Cystatin + ASO3
B. Ac-MTP-2 + ASO3
C. Ac-GST + ASO3
D. ASO3
E. Irradiated Ac-L3 1000
Challenge 25/Feb
8-Mar
10-Mar
12-Mar
15-Mar
17-Mar
19-Mar
22-Mar

Fig. 6

A.

GTTAAAGCCGTGTAAGCAACAGGGTTCTTTGTGATGTTAACTCTCGCTGCACTTCTGAT
TTCTGTTTCGCTGGTTGAGCCGACAGGCATAGGTGAGTTTCTTGCTCAACCAGCACCTG
CATATGCTAGAAGACTCACAGGGCAGGCCCTTGTTGACTACGTCAATTCGCACCACTCA
TTGTACAAGGCCAAATATTCACCAGATGCTCAAGAACGCATGAAATCTAGAATTATGGA
TTTGAGTTTCATGGTTGATGCGGAAGTCATGATGGAAGAAATGGACCAGCAGGAGGATA
TAGATCTCGCTGTTTCTTTACCTGAAAGTTTCGACGCTCGTGAAAAATGGCCAGAATGT
CCTTCAATAGGATTAATCCGTGATCAGTCCGCCGGTGGAGGATGTTGGGCAGTATCCTC
AGCAGAGGTGATGACCGACAGGATCTGTATACAATCAAATGGAACAAAGCAGGTGTATG
TTTCCGAAACGGATATCTTATCATGCTGTGGACAACGTTGCGGTAGCGGGTGTACCTCA
GGTGTGCCACGTCAAGCTTTCAACTATGCAATTCGTAAAGGTGTTTGCAGTGGAGGACC
ATATGGAACGAAGGGTGTTTGCAAACCCTATCCTTTCTATCCATGCGGCTATCATGCTC
ATCTGCCATATTATGGACCATGTCCAGATGGTATGTGGCCTACGCCAACATGCGAAAAG
GCATGTCAATCCGACTATACTGTTCCGTACAACGATGACAGGATCTTCGGCAGCAAAAC
TATTGTCTTGACGGGAGAGGAAAAAATTAAGCGAGAGATTTTCAATAACGGACCATTGG
TAGCCACGTATACAGTTTACGAAGATTTCGCTTATTACAAGAATGGAATTTACATGACT
GGTCTCGGTAGAGCGACAGGCGCACATGCAGTCAAAATTATTGGCTGGGGTGAAGAAAA
TGGAGTCAAGTATTGGTTGATTGCAAACTCGTGGAACACTGATTGGGGAGAGAATGGCT
TCTTCCGCATGCTTCGTGGAACAAACCTTTGCGATATTGAACTAAGCGCGACTGGAGGA
ACGTTCAAGGTGTGAACGTGATCGAAAAGAACGATTTTGAACAAAAATCTTCCCGTATT
GTCATCAAAAAAA

C.

MLTLAALLISVSLVEPTGIGEFLAQPAPAYARRLTGQALVDYVNSHHSLYKAKYSPDAQ
ERMKSRIMDLSFMVDAEVMMEEMDQQEDIDLAVSLPESFDAREKWPECPSIGLIRDQSA
GGGCWAVSSAEVMTDRICIQSNGTKQVYVSETDILSCCGQRCGSGCTSGVPRQAFNYAI
RKGVCSGGPYGTKGVCKPYPFYPCGYHAHLPYYGPCPDGMWPTPTCEKACQSDYTVPYN
DDRIFGSKTIVLTGEEKIKREIFNNGPLVATYTVYEDFAYYKNGIYMTGLGRATGAHAV
KIIGWGEENGVKYWLIANSWNTDWGENGFFRMLRGTNLCDIELSATGGTFKV*

A.

TTAATTCTTATTGCTCTGGTGGTGACGGCGTTGGCTCAACAGCCGCTTTCACTAAAGGA
GTATCTGGAACAGCCGATACCAGAGGAGGCAGAGAATCTTTCCGGAGAAGCGTTTGCGG
AGTTTCTGAACAAACGACAATCGTTTTTCACGGCTAAGTACACGCCAAATGCTTTAAAC
ATTCTTAAAATGCGTGTGATGGAATCGAGATTCCTGGACAATGAAGAAGGTGAAATGCT
AAAAGAGGAGGACATGGATTTCAGTGAAGAAATTCCTGTTAGTTTTGATGCTCGAGACA
AATGGCCCAAATGCACCTCCATAGGATTTATCCGTGATCAATCACACTGTGGTTCATGC
TGGGCAGTATCGTCAGCAGAAACGATGTCAGATCGACTCTGCGTGCAATCAAACGGTAC
AATTAAGGTACTTCTATCCGATACGGACATCCTTGCCTGTTGCCCGAATTGTGGTGCTG
GATGTGGAGGAGGCCACACAATTCGAGCGTGGGAATATTTTAAGAACACAGGCGTTTGC
ACTGGCGGACTATATGGAACAAAGGATTCCTGCAAACCATACGCTTTCTATCCATGTAA
AGACGAAAGTTACGGAAAGTGCCCCAAGGATTCTTTTCCAACACCAAAATGTCGAAAAA
TTTGTCAGTATAAATACAGTAAGAAGTACGCCGACGACAAATACTACGCGAATTCCGCA
TATCGAATTCCACAGAATGAGACGTGGATCAAATTGGAGATCATGAGAAACGGGCCTGT
GACAGCATCATTCAGGATTTATCCGGATTTTGGGTTTTACGAAAAAGGAGTTTATGTGA
CTTCAGGCGGAAGGGAACTAGGTGGGCACGCGATTAAAATCATTGGATGGGGAACGGA
AAAAGTAAACGGAACTGACCTACCTTACTGGTTGATTGCTAACTCTTGGGGTACTGACT
GGGGAGAGAATAACGGCTATTTCCGCATACTTCGCGGACAAAATCACTGCCAAATAGAA
CAGAAAGTTATCGCCGGTATGATAAAAGTACCACAACCGAAATCCGCCGGTCCACCACT
TCAACCCAATCCTTCAAGCTGAACCAAGTTGTAGTATTGTCCCCATCAATCCAAGCATT
TCTTGGGGTGATACTTTTACGAATAAAAACTACATTATAAAAAAAAAAAAAAAAAAA

B.

LILIALVVTALAQQPLSLKEYLEQPIPEEAENLSGEAFAEFLNKRQSFFTAKYTPNALN
ILKMRVMESRFLDNEEGEMLKEEDMDFSEEIPVSFDARDKWPKCTSIGFIRDQSHCGSC
WAVSSAETMSDRLCVQSNGTIKVLLSDTDILACCPNCGAGCGGGHTIRAWEYFKNTGVC
TGGLYGTKDSCKPYAFYPCKDESYGKCPKDSFPTPKCRKICQYKYSKKYADDKYYANSA
YRIPQNETWIKLEIMRNGPVTASFRIYPDFGFYEKGVYVTSGGRELGGHAIKIIGWGTE
KVNGTDLPYWLIANSWGTDWGENNGYFRILRGQNHCQIEQKVIAGMIKVPQPKSAGPPL
QPNPSS*

Figure 63.

A

TCGTTGAGGCGTTATTTCAAGCTTCTCTCGCCTCGATTTCAGATTCTCCAATTGTTTC.
GTGAATCGTGGAACAGTCAATCTCACTTTTGTGAGATCCAATGAAAGCTAATTTTGCG1
TGGTCGTCGTCCTTCTGGCAATAAACCAGTTATATGCAGATGAGCTGCTTCACAAACAA
GAGTCCGAACACGGACTTAGTGGCCAAGCGCTCGTTGACTACGTTAATTCGCACCAATC
ACTTTTCAAAACAGAATATTCGCCAACCAATGAACAATTCGTTAAAGCCCGTATAATGG
ACATAAAGTATATGACTGAGGCTAGCCACAAATATCCAAGAAAGGGCATTAATCTGAAC
GTTGAACTCCCTGAAAGGTTTGACGCACGTGAAAAATGGCCACATTGCGCCTCCATCGG
TCTCATTCGCGATCACTCTGCTTGCGGATCGTGTTGGGCTGTATCGGCAGCGTCGGTTA
TGTCAGATCGACTCTGTATCCAGACGAACGGCACAAACCAGAAGATCCTTTCGTCGGCG
GACATCCTTGCGTGTTGTGGAGAAGACTGTGGCTCAGGATGCGAAGGCGGTTATCCGAT
TCAGGCGTACTTCTACCTGGAAAATACTGGAGTATGTAGTGGAGGAGAGTATCGAGAAA
AGAATGTATGCAAACCATATCCCTTTTATCCGTGTGACGGAAACTATGGACCATGCCCC
AAGGAGGGTGCGTTCGACACTCCAAAGTGTCGGAAAATATGTCAGTTCCGATATCCTGT
TCCATACGAAGAAGATAAAGTGTTTGGAAAAAATTCACACATCCTTCTGCAAGACAACG
AGGCAAGAATCAGACAGGAAATTTTCATAAACGGACCAGTGGGAGCTAATTTTTACGTT
TTCGAAGACTTTATACACTACAAGGAAGGGATTTATAAGCAGACATATGGGAAATGGAT
AGGAGTACATGCAATCAAACTTATTGGTTGGGGCACAGAAAATGGAACAGATTATTGGT
TGGTTGCTAACTCGTACAACTACGACTGGGGAGAGAATGGCACCTTCCGCATTCTTCGT
GGAACTAATCACTGTTTGATAGAATCACAAGTGATCGCAACGGAGATGATTGTATGAAT
GTCTAATGAACGATTGGTCGCATGCCGATCTCTGAAGTAAAATGTGTTAATCAAAAAAA
A

MKANFALVVVLLAINQLYADELLHKQESEHGLSGQALVDYVNSHQSLFKTEYSPTNEQF
VKARIMDIKYMTEASHKYPRKGINLNVELPERFDAREKWPHCASIGLIRDHSACGSCWA
VSAASVMSDRLCIQTNGTNQKILSSADILACCGEDCGSGCEGGYPIQAYFYLENTGVCS
GGEYREKNVCKPYPFYPCDGNYGPCPKEGAFDTPKCRKICQFRYPVPYEEDKVFGKNSH
ILLQDNEARIRQEIFINGPVGANFYVFEDFIHYKEGIYKQTYGKWIGVHAIKLIGWGTE
NGTDYWLVANSYNYDWGENGTFRILRGTNHCLIESQVIATEMIV*

A

TAGATAATAATCTTTTTGCACGTCAGAGAATTTCTTTGATAAAACCACAATTAAACAAT
CTCAGCGCTGTAAACACGTGCAAAACTACTCGTTCATTTCTCTTCACTTTCCCTCCAAA
ACCAAACATTCAAGAGAAGCATGATAACCATCATTACCCTATTGCTTATCGCTTCTACA
GTGAAGTCACTAACAGTGGAGGAGTACTTGGCCCGACCAGTGCCGGAATATGCCACAAA
ACTGACAGGACAAGCCTACGTTGACTATGTTAATCAGCATCAATCATTCTACAAGGCTG
AATATTCCCCGCTGGTTGAACAGTATGCCAAAGCTGTGATGAGATCTGAGTTTATGACG
AAGCCGAACCAAAATTATGTGGTGAAGGACGTAGATCTAAACATCAATCTTCCAGAAAC
CTTCGACGCAAGGGAAAAATGGCCAAACTGCACATCAATAAGGACAATTCGCGATCAGT
CCAATTGTGGATCATGTTGGGCAGTATCAGCGGCGTCGGTAATGTCAGATCGTTTATGC
ATACAGTCGAACGGCACAATACAGTCATGGGCTTCTGATACGGATATTCTATCATGTTG
CTGGAATTGCGGAATGGGATGCGATGGAGGTAGACCGTTTGCGGCGTTCTTTTTCGCGA
TAGACAATGGTGTATGCACTGGAGGACCTTTCAGAGAGCCAAACGTGTGCAAACCATAC
GCTTTCTATCCATGCGGTCGCCACCAAAACCAGAAATACTTCGGACCTTGTCCAAAAGA
GCTCTGGCCCACTCCAAAATGTCGGAAAATGTGTCAACTAAAATATAATGTGGCCTACA
AAGACGATAAAATTTACGGGAATGATGCATACAGTCTCCCTAACAATGAGACACGAATC
ATGCAAGAAATTTTCACAAATGGACCTGTAGTGGGATCATTCAGCGTGTTTGCTGACTT
TGCAATTTATAAGAAAGGAGTATATGTGAGTAATGGAATTCAGCAGAATGGGGCTCATG
CAGTCAAAATTATTGGTTGGGGTGTGCAGGATGGACTAAAATATTGGTTGATTGCTAAT
TCCTGGAACAATGACTGGGGAGACGAAGGCTATGTCCGGTTCCTTCGTGGAGATAACCA
CTGTGGAATTGAATCAAGGGTGGTGACAGGAACTATGAAAGTGTAAAACAATAATTAGT
CTTTTCCTGACGATTTCAAATAAAATCTTTGCCACTAAAAAAAAAAAAAAAAAAAA

MITIITLLLIASTVKSLTVEEYLARPVPEYATKLTGQAYVDYVNQHQSFYKAEYSPLVE
QYAKAVMRSEFMTKPNQNYVVKDVDLNINLPETFDAREKWPNCTSIRTIRDQSNCGSCW
AVSAASVMSDRLCIQSNGTIQSWASDTDILSCCWNCGMGCDGGRPFAAFFFAIDNGVCT
GGPFREPNVCKPYAFYPCGRHQNQKYFGPCPKELWPTPKCRKMCQLKYNVAYKDDKIYG
NDAYSLPNNETRIMQEIFTNGPVVGSFSVFADFAIYKKGVYVSNGIQQNGAHAVKIIGW
GVQDGLKYWLIANSWNNDWGDEGYVRFLRGDNHCGIESRVVTGTMKV*

Figure 6F

A.

ATTTTCAATGACCAAGCTCCTCGTAAGCACCGCCGGGTTGACTGGCGTCGTCGCGGCCC
TCTTCATCACTTCTCTGGTTTTCAGCATCCTTACATGGACACGTGTAAAAAATGACAAC
GATAACCCACCAAGACCTAAGGAGCCACTCAGTCGTCCAGTAGTGCAATTGTCTTCATC
TATTCAGACTACCGTAACCGAAAATGTAGTGACAGAACCCATAGTGACTGTGCCGACAG
TGTCACGCACCAGAGTTTCGGCAAAAACAATATCACCGAGAAGTTCCGCGACAACGTCA
ACTCGAACGCTTCGAACTCTCACCACACCGAAATTCGTCGCAACGGAGGCCGCACCGCG
ACGTAATCGTACGATAATGTGTCCGAACTATGGAGTTTCAGACAACTCATACGCATACC
AGGAAGCAGCATCGTTCATTCTTAGTGGCCTCGACGAACGTGTCAATCCGTGCGAAGAT
TTCTACGCTTTCACTTGTAACAAGTTTCTAAAAGATCATAAGGCTGAAGAACATGGGGT
CAGTCGTTACGGAGCTATAAAAGAACTTCAAGATGCAGTGAACACAGAAATAGTTGACG
CCCTCTTCGATGTGGATGTGAACGATAAGAAGCGGTCAGAAACAGAGAGAATAACGAAA
GCGCTTCTCCACGACTGCGTTTACCACATCTCGCCTAATGTTCCGACCGAAACAATCAT
TAATTTCCTTGAAGAAATTGCAAGAATGTTTGGAGGTATACCGTTCCTCAACCACACTC
TAAAAGAAGATTTTGACGTTTTCGCTGCAATGGGAGAAGTCGAACAAAATCACGCGATG
GGTACGCTTTTCAGCGCAATGGTTTCGGTCGACTACAAGAAGATCAAACAGAATTCACT
GTTCTTATCACAGCCTCGGCTTCCGATGCCAAGAGAATTCTACGTGCTTCCACAGTTTA
CGATGAAGCTTAAAAAACGTGGACTTCAAATTGCTGACGTTTTAAAGAAATTTGCCGAG
AAGATCTTAGAAGAACCCGATAAGTATAGGGATATGATAGAAAAGGCTGCGCAAGATGT
TGTGGAACTAGAGAGGAGGATCGCTCTGGCGTCTTGGGCAGATGCCGAAATGAGAAACT
ACGCACAACAGTACAATCCCTACGATCTGCCCACTTTGAAAAAGGCGTATCCATCTGTC
AAATGGGAGAGCTATCTACGTAGCCTTTTGTCAACCGTCGGTCCAGTCGATTTTTCTGG
TCCACATAAACGGCTCATAATCTCGCAACCGTCGTATTTTGGGTGGTTGAATGCTCTCT
TCAATGGTAACGTTGTTGACGAAAATACGATAGTAAACTATATAATCACGCACTTAATC
TTCGAAGATGCGGAATTCCTTGGTGGTATATTTAAAGAATCTGCAGAGGATTTAAATTA
CGTCCGGTATGCGCAGAGAAGTGGCAGAGGAGTTGCCCGAGTTGGAAGGCAACTTATGC
ATCAAAGAGATACCAGGGGCGACCCGAATATCCCGTGCATGAATTTCATCATGACGTAC
ATGCCGTATGGACCTGGTTATGTCTATGTAAGAAGCAAACAGCAGAGAAACGATGTTCA
AGCAGACATTAGGAAACAAACAGAACTCGTCATCGAGAGCTTTCTGAATATGACTTCGG
GCCTGAAGTGGATGTCTTCGGATTCGAAAGAAAAAGCTAGACAGAAGGCTAAGGGTATG
GTGAGGAACTACGGATGGCCTCAAAAACTCTTCGGAGACTTTAAAAGCAGCGAAGAGAT
TGATGAATATCACAAGAAGGATTATGCTGAAATCCTTGAGCTTACCAAGACGGAGAGGA
GCAGCCTTCGATATTACCGTATGCGCCGGGTGCTGATTAAAGGATATTCAAATCGCGAG
TCACTGCGTTTACTTTTGCAGGATGCAGACAGGTCCAATTTCCTCCTATCACCAGCGTT
AGTGAGCGCCTGGTACCAGCCGGAAAGGAACTCTATCACTTTCCCTTACGCGAGCTTCA
ATCCACCGTACTATAGCTATGAATATCCTCAAGCTTACAACTATGGTGGTCAGGGTGGA
ACTGCCGGTCATGAGCTAGTCCATGGATTTGACGACCAAGGAGTGCAGTTCGGTCCCGA
TGGAAGTCTAAGTAGGTGTACGTGGTATGATTGTGGATGGATGGATAAAAGATCAAAAG
ATGGTTTCAACGACATGGCCCAATGTGTTGTAACACATTATAGCACTTTCTGCTGCCCA
GAACAGGAAGGTAATATACACTGCGCAAATGGTGCAACCACACAAGGGGAAAATATTGC
TGATATTGGAGGTGAACATGCTGCATACATAGCATATCGAGAGTACATCAAATCACTAG
GACATGAAGAGAAAAGATTGCCAGGATTAGAACGATACACACCAAACCAGATCTTTTGG
ATTACATATGGATACTCATGGTGCAGGAGCGTAACAGAGGAATACCTTATTAGTCAACT
TCTCACCGACCCCCACGCACCAAGTGCTTGCCGCACTAACCAAGTAGTCCAAAGTATCC
CTGCGTTTGGACGGGATTTCGGGTGCTCATTAGGAGACAGAATGTATCCTGCACCAGAG
CAGCGATGTTCAGTTTGGGTTCAAGAGTAAATGGTCGGACGAAACTGTCGGATTTTATG
TTTCAGTCGGATTATAACACTATCAACTAAACATTTCGTTCAAAAAAAAAAAAA^{1}

B.

MTKLLVSTAGLTGVVAALFITSLVFSILTWTRVKNDNDNPPRPKEPLSRPVVQLSSSIQ
TTVTENVVTEPIVTVPTVSRTRVSAKTISPRSSATTSTRTLRTLTTPKFVATEAAPRRN
RTIMCPNYGVSDNSYAYQEAASFILSGLDERVNPCEDFYAFTCNKFLKDHKAEEHGVSR
YGAIKELQDAVNTEIVDALFDVDVNDKKRSETERITKALLHDCVYHISPNVPTETIINF
LEEIARMFGGIPFLNHTLKEDFDVFAAMGEVEQNHAMGTLFSAMVSVDYKKIKQNSLFL
SQPRLPMPREFYVLPQFTMKLKKRGLQIADVLKKFAEKILEEPDKYRDMIEKAAQDVVE
LERRIALASWADAEMRNYAQQYNPYDLPTLKKAYPSVKWESYLRSLLSTVGPVDFSGPH
KRLIISQPSYFGWLNALFNGNVVDENTIVNYIITHLIFEDAEFLGGIFKESAEDLNYVR
YAQRSGRGVARVGRQLMHQRDTRGDPNIPCMNFIMTYMPYGPGYVYVRSKQQRNDVQAD
IRKQTELVIESFLNMTSGLKWMSSDSKEKARQKAKGMVRNYGWPQKLFGDFKSSEEIDE
YHKKDYAEILELTKTERSSLRYYRMRRVLIKGYSNRESLRLLLQDADRSNFLLSPALVS
AWYQPERNSITFPYASFNPPYYSYEYPQAYNYGGQGGTAGHELVHGFDDQGVQFGPDGS
LSRCTWYDCGWMDKRSKDGFNDMAQCVVTHYSTFCCPEQEGNIHCANGATTQGENIADI
GGEHAAYIAYREYIKSLGHEEKRLPGLERYTPNQIFWITYGYSWCRSVTEEYLISQLLT
DPHAPSACRTNQVVQSIPAFGRDFGCSLGDRMYPAPEQRCSVWVQE*

A

GAAAAGCCTACGCAGTCATGCTCAAACTCGTCGCCCTAGCCTGCTTAGCTGCGATCTGC
CTCGCTCAGGGTGGACCCGAAGGACCCCCTCCTTTCCTGAAGAGTGCTCCCCCCGAGAA
GGTGAAGGAATTCGACGCTCTTTTCGCCGATGCTGGAGGTCTGACTGATGCCCAGATCG
ACGCTAAGGTCAAGGGATGGATCGGAAAGCAGAGTCAGGATATCCAGAACGCATTCAAT
GCCTTCGAGAGTGAGGTGAAAGCCGCCCAGCAACAGGGTGAGCAAGCTCACCAGGCTGC
TGTCGCCAAATTCAGCGCTGAAGCCAAGGCTGCCGACGCCAAGCTCACCGCTATCGCCA
ATGACGCCTCCAAGACGAATGCACAGAAGGGAGCCGAGATCGACGCCGTTCTCAAGGGT
CTTCCACAAAAAGTCCGTGATGAAATCGAGAATGCAATGAAGGGATAAGAGGGCGTTGT
TTTGTATATATGAACCGATAAATATGCAAAATAAATATCTCCCCTTCAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAA

B

MLKLVALACLAAICLAQGGPEGPPPFLKSAPPEKVKEFDALFADAGGLTDAQIDAKVKG
WIGKQSQDIQNAFNAFESEVKAAQQQGEQAHQAAVAKFSAEAKAADAKLTAIANDASKT
NAQKGAEIDAVLKGLPQKVRDEIENAMKG*

Figure 67

A

CAGTCATGCTCAAACTCGTCGCCCTAGCCTGCTTAGCTGCTATCTGCCTCGCTCAGGGT
GGACCCGAGGGACCCCCTCCTTTCCTGAAGAGTGCTCCCCCCGAGAAAGTGAAGGAATT
CGACGCTCTTTTCGCCGATGCTGGAGGTCTGACTGATGCCCAGATCGACGCTAAGGTCA
AGGGATGGATCGGAAAGCAGAGCCAGGACATCCAGAATGCATTCAATGCCTTCGAGAGT
GAGGTGAAAGCCGCCCAGCAACAGGGTGAGCAAGCTCACCAGGCTGCTGTCGCCAAATT
CAGCGCTGAGGCCAAGGCTGCCGACGCCAAGCTCACCGCTATCGCCAATGACGCCTCCA
AGACGAATGCGCAGAAGGGAGCCGAGATCGACGCCGTTCTCAAGGGTCTTCCACAAAAA
GTCCGTGATGAAATCGAGAATGCAATGAAGGGATAAGAGGGCGTTGTTTTGTATATATG
AACCGATAAA

MLKLVALACLAAICLAQGGPEGPPPFLKSAPPEKVKEFDALFADAGGLTDAQIDAKVKG
WIGKQSQDIQNAFNAFESEVKAAQQQGEQAHQAAVAKFSAEAKAADAKLTAIANDASKT
NAQKGAEIDAVLKGLPQKVRDEIENAMKG*

Figure 6A

```
   1 tttgagatgt ggattctcgc tgcattagtg gtaacggcac ttgccgcaaa accgactacg
  61 gttgaggagt tccacgctca acctatagag gagcacgtta aagacctcag tggacaagct
 121 tttgttgact acatcaacga gcatcaatct ttctataggg cggaatattc accagaggcg
 181 gaagcgttcg tgaaagctcg gataatggac tcgaagtatt tagtggaacc taagaaagaa
 241 gaagtgctgg aggacgtata tggcaatgat ccgcctgcga gcttcgacgc tcgcacccac
 301 tggcctgaat gcagatccat tggcaccatt cgtgaccagt catcatgcgg ttcatgttgg
 361 gcagtatcct cagcggaagc catgtcggat gaaatatgtg ttcagtcgaa cagtacgata
 421 agggtgatga tttccgactc agatatactc tcgtgctgtg gaatttcctg tggatatgga
 481 tgccaaggtg gttggccgat cgaagcatac aaatggatgc aacgtgacgg tgttgttaca
 541 ggtggaaaat acagacagaa gaaagtgtgc aagccgtacg ccttctatcc gtgtgggcac
 601 caccaaaatg acccctacta tggaccttgc ccaggggctt tatggcccac tccaaaatgt
 661 cgaaagacgt gtcagcgaaa atacaacaag tcctaccaag aagacaagca ctttgcaacg
 721 agggcctact acctcccgaa taatgaaagg aacatcaggc aagagattta caagaacgga
 781 cctgtggtcg cagctttcag agtctaccag gacttcagtt attacaaaaa aggaatctat
 841 gtgcacaagt ggggtggtca aacaggagca catgctgtca aagtcgttgg ttggggcaga
 901 gaaaatgcaa cagattactg gctgattgcg aactcgtgga acactgactg gggagaaagc
 961 ggctatttcc gtattgttcg tggaactaac gagtgcggta tcgaagcaca aatggtcggt
1021 ggagcgatga gagtgtgaaa tactcgacta tgacgccgtt ctttaatcgg ctatcgtaat
1081 gaatcattct gag
```

```
MWILAALVVTALAAKPTTVEEFHAQPIEEHVKDLSGQAFVDYINEHQSFYRAEYSPE
AEAFVKARIMDSKYLVEPKKEEVLEDVYGNDPPASFDARTHWPECRSIGTIRDQSSC
GSCWAVSSAEAMSDEICVQSNSTIRVMISDSDILSCCGISCGYGCQGGWPIEAYKWM
QRDGVVTGGKYRQKKVCKPYAFYPCGHHQNDPYYGPCPGGLWPTPKCRKTCQRKYNK
SYQEDKHFATRAYYLPNNERNIRQEIYKNGPVVAAFRVYQDFSYYKKGIYVHKWGGQ
TGAHAVKVVGWGRENATDYWLIANSWNTDWGESGYFRIVRGTNECGIEAQMVGGAMR
V*
```

Figure 5-1

A

TTTAATTACCCAAGTTTGAGCAGCATGCCATACCTCGCATTCATTGTCGCACTACTAGC
CTGTACTGTTATGTCGGGTCACGGTCAAATGACGGGAGGATTAACGAAGCAGGATCCCA
ATGATCCTGAACACATGGCTAGAGCATGGAAGGCCGCAAAAGGCATCAATGAGGACGCT
TCTAACGCTGGACCGTACCACATGATTCCTATTAAGATCGTAAAGGCCGAATCTCAAGT
TGTCGCTGGAGTTAGGTACATATTTGAAGTGCTGTTCGGCGAATCCACGTGTAAGAAAG
GACATATGGCTGCAACCGAACTTTCTGCCTCCAACTGTGAGCTGAAAGAAGGAGGAAAC
CGAGCTCTATACAAAGTTGAGCTTTGGGAGAAGCCATGGGAAAACTTCGAGCAGTTCAA
CGTGGAGAAGATCCGAAATGTTGCCGCCGGCGAGCAAATCTAGCCGCTTCTTTAAGACA
CCTCACTGCGCCGGCGTCTATAT

B

MPYLAFIVALLACTVMSGHGQMTGGLTKQDPNDPEHMARAWKAAKGINEDASNAGPYHM
IPIKIVKAESQVVAGVRYIFEVLFGESTCKKGHMAATELSASNCELKEGGNRALYKVEL
WEKPWENFEQFNVEKIRNVAAGEQI*

A

TTAGTTTTGCAAGGGTTTGGTGCAGGAAACTGGGATCAACTTCGAGTTTGCTAACGAGA
CTCTTAACCGATCCTCATTCACCAGCACCTTATCGCGTTCTTGGAACGCTGCAGAACTT
CCCCGCATTTAAAGAAGCCTTCAATTGTCCGAAATCACCTTACGCACCAGATAAACACT
GTAACGTCTGGGTATCGGAGCTAGATACATCACATGGTGAGCCCAAGGTAAAAACAGAG
CTGAATATAGCGGCGCCTCCACAGATCACTCCGAACGACAAGGAAAAGTATGATGCCGC
CAAGGTGGCCATCAGTTTCTTTCAGGAATCCGTCAATACCTCTGTTGATCCATGTGAAG
ATTTCTACAAGTATGCTTGCGGAAAGTACCAAAAAGCGGTCTCCTTCCACTATGCCGAC
GCTAAAAACCTCGTAGCAATGGCTAACCAATTGACAAATAAGGACTACCAGAAAGTTAT
CAAGAGCTCAACAGCATTAACCAAGGAGAAGGCGTTCTTCGATGCGTGCGTAGCTGCAA
CGAAAGACTCTGGTCACAATAATCAGATCCTCATTTCCAATAATTATCTCATGAAACGA
GTAAGGAAGTTGGCTGACTACCTTGGAGCTGAGTTTACCTATGCACTTGGCGGCAGAGT
GGAGCGACTGCCCAATAAGGTTCAGCTGGCAAACGCTTTGGGTTACCTCTCCTTTGACC
AGAACATTCAAACGCTGGTGACACCTCTTGTCGACACATATTGGCCAGACCCGAATAAA
GGATACACGATGTTCCTCGATCAGAATACTGCATATATGAGCAAGACTTTCTACCACCC
GGATGCTTTCAAAACCATTAAGGAAAACTATATTAATTCTGCGACTAAGGTCATAGAAA
CGTTCGTAAAAACTCAGAATAAACCGATTGATCCTAAACTCAAGGATAAGGTGAGAGGC
CTGGTGGAATTTGAACAAATGATCGCGAACAAGTACAGCACCGATGATGACACACGCCG
AATCTACTTGCGATCATGGAATCTCAGAAGCATTAGGGAGCTACAGAACCAATTTGGTT
TCGTTGATTGGCAAACATATATGAAGATGGTTCCCATGGTTGCGCAAAACAAGGTGCAA
TCTGCGGATTTCAGAGTTTCCGTCATGGAGCCGGGTCAGTACGCCAACATGAGTCGTGA
TTATGCTGGATTTGACAAAGAAAAACTAGTGAACTACTTGTTTATGCGCCTGCTGCTAT
CTAATGCTCAGTATTTGCCAACCTATGCCAGCAGTTTCAAAGAGATGCCGGAAGAACCA
CTAGTTCTTGGACGGAAGCGACGCAACATCCATTTCTCAAAATCCGACACCCTTACTGA
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GGTGGTGTGATGCACAATGTTATCCATGCTTTCCAAAGCATGGTTGATCAACTTGACTG
GATGAGCGAAGCGACAAAGAGAAAAGCAATAGAAAAGAGCATGAATATCATAACAAACA
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GCTGGAATACTTCGTCCTCCTTATTTCCATCCTGATTGGCCAGCATCAATCAAATACGG
TGGAATTGGTCTAATAGCAGGACATGAACTGATTCACGGCTTTGACGATCAAGGTGTTC
AGTGGGGTCCAAAGGGACACATCTCTTACCCAGAGAAGAACTGTATTGGATGGATGGAT
GAGCAATCAACGAAAGGTTTCAATCGCTTGGCTCAATGTGTCATCGATGAGTATAGCAC
GTTCTGCCCTCTTGACAACAGGACATACACACCAAATTGTGTGAATGGAGCGCAGACCC
AAGGAGAGAACATCGCCGATAATGGAGGGGTACACGCGGCGTTCCGCGCTTACCGTACA
CACATCTCTCTCAATGGACCAGATCCACAGCTTCCTGACAGACTGTTCGGGCAGTTCAC
ACATGATCAGCTGTTCTTCTTGAACTTCGCACAGGTGTGGTGCGAGAAACGACGAGTCG
ATGACAGACTTTACCAGCAGCTCATGGTTGACCCCCACTCTCCAGCGATGTACCGAGTG
TTCGGTACTCTTCAGAACTATCCGGCCTTCAGAGCCGCATTCAACTGTCCGCTTAATTC
GCGATACGCTCCTAAGGATCATTGCAATGTTTGGGTGCCGAATTATATGCCATAAGAGG
AAGTTCTTCCTTGAAAACTACCTACTCAACATAAATAAAGTCTGTGATTTTAAAAAAAA
Aaa

SFARVWCRKLGSTSSLLTRLLTDPHSPAPYRVLGTLQNFPAFKEAFNCPKSPYAPDKHC
NVWVSELDTSHGEPKVKTELNIAAPPQITPNDKEKYDAAKVAISFFQESVNTSVDPCED
FYKYACGKYQKAVSFHYADAKNLVAMANQLTNKDYQKVIKSSTALTKEKAFFDACVAAT
KDSGHNNQILISNNYLMKRVRKLADYLGAEFTYALGGRVERLPNKVQLANALGYLSFDQ
NIQTLVTPLVDTYWPDPNKGYTMFLDQNTAYMSKTFYHPDAFKTIKENYINSATKVIET
FVKTQNKPIDPKLKDKVRGLVEFEQMIANKYSTDDDTRRIYLRSWNLRSIRELQNQFGF
VDWQTYMKMVPMVAQNKVQSADFRVSVMEPGQYANMSRDYAGFDKEKLVNYLFMRLLLS
NAQYLPTYASSFKEMPEEPLVLGRKRRNIHFSKSDTLTDTQANCAKVANELMMFANGRV
FVDYVYPDEKYKDLIRSSAGGVMHNVIHAFQSMVDQLDWMSEATKRKAIEKSMNIITNI
AFPDWIMDNAKLDLYYKSITFDPTKENYYDIWTKLTIFNIEAQYKHLTMATADYEEFLM
PPGIVNAWYQPELNTITFPAGILRPPYFHPDWPASIKYGGIGLIAGHELIHGFDDQGVQ
WGPKGHISYPEKNCIGWMDEQSTKGFNRLAQCVIDEYSTFCPLDNRTYTPNCVNGAQTQ
GENIADNGGVHAAFRAYRTHISLNGPDPQLPDRLFGQFTHDQLFFLNFAQVWCEKRRVD
DRLYQQLMVDPHSPAMYRVFGTLQNYPAFRAAFNCPLNSRYAPKDHCNVWVPNYMP*

A

ACAGATGAGATCTCTTTGCCTGCTGCTCGCTGTGGTGCTTGTCGCCGTCCACGCAAAAA
TGCAGAACGTCACCGTCAAGGGGACCACCATCTGCAACAAGAAGCGAATGGCCGATGTG
ACGGTGGAACTGTGGGAGAGAGACACCCTCGACCCCAACGACCTCCTCGACTCCAAGAA
GACCTCTAGGGAAGGCGAGTTCCTCGGGAAAGGTGGTCAGAACGAAGTCGGCTCGATTG
AGCCATTCCTCAAAATTACACACACCTGCAATGTCAAGAAACCGGGCTGCAAGAGAATC
ACTGAGTTCGACATCCCGAAGTCGAAGATCGACACGGTCTACGACATGACCTACGTGAC
GCTGGATATCATTTCCGCAGTCGATAAGGAGAAGTGCTACATGAACGCGTTGTTTTCCA
CGGCAATATTTTGTATAGACAGATGAACATTCCTTCCGAAAAAAAAAAAAAAAAAAAAA

MRSLCLLLAVVLVAVHAKMQNVTVKGTTICNKKRMADVTVELWERDTLDPNDLLDSKKT
SREGEFLGKGGQNEVGSIEPFLKITHTCNVKKPGCKRITEFDIPKSKIDTVYDMTYVTL
DIISAVDKEKCYMNALFSTAIFCIDR*

A.

AGTGCCATTGCCGAGGGATGGCTCGCCTTGTACTGTTACTCGCACTATTTACCCTGGCT
GTGGCCAGCGTCCACAGGAGGACATTCCACCAGCCGCGTCGTTACGTGAAGTCGGTGTC
GCTTTCGCGTCAACCAACACTTCGTGAACGATTGCTGGGAACTGGCAGTTGGGAGGACT
ACCAGAAGCAACGCTATCACTACCAGAAGAAACTTCTGGCAAAATATGCGGCAAACAAG
GCGTCGAAACTACAGTCCACCAATGAGATTGACGAGCTCCTTCGTAACTATATGGATGC
ACAATATTTCGGCACCATCCAAATCGGAACTCCAGCGCAGAATTTCACAGTGATTTTCG
ACACCGGTTCATCCAACCTCTGGGTGCCGTCCAGGAAATGCCCATTCTACGACATCGCG
TGCATGCTTCACCACCGCTACGATTCTGGAGCATCGTCAACGTACAAGGAGGATGGACG
TAAGATGGCTATTCAATATGGAACTGGCTCAATGAAGGGCTTCATTTCTAAGGATAATG
TCTGCATCGCCGGAATTTGTGCTGTCGAGCAACCGTTTGCCGAGGCAACGAGCGAGCCA
GGCCTCACGTTCATCGCTGCGAAGTTCGACGGAATCCTTGGCATGGCCTTCCCTGAAAT
CTCCGTTCTCGGTGTACCACCAGTATTCCACACGTTCATTGAACAGAAGAAAGTGCCGA
GCCCGGTGTTCGCTTTCTGGCTCAACAGAAATCCCGACTCGGAACTCGGAGGGGAGATC
ACCCTCGGTGGAATGGACCCCCGCCGATATGTTGAGCCGATCACATGGACCCCAGTAAC
TCGACGAGGATATTGGCAGTTCAAGATGGACAAGGTTCAAGGAGGATCAACGTCCATTG
CCTGCCCCAACGGATGCCAGGCTATCGCTGACACTGGTACTTCACTGATTGCCGGACCT
AAGGCTCAAGTTGAGGCTATCCAGAAATTCATTGGTGCTGAGCCACTTATGAAGGGAGA
GTACATGATTCCCTGCGACAAGGTGCCTTCCCTCCCGGAGCTGTCCTTCGTTATCGAGG
GCCGGACTTTCATCCTCAAGGGTGAAGATTACGTATTGACCGTGAAAGCTGGTGGTAAA
TCGATCTGCCTGTCCGGTTTCATGGGAATGGACTTCCCGGAGAGGATCGGAGAGCTGTG
GATTCTTGGAGACGTCTTCATTGGAAAGTACTACACTGTCTTCGATATTGGCCAAGCTC
GTCTTGGATTTGCTCAGGCTAAGTCAGAAGATGGCTATCCGGTTGGTCCTGCTGTTCGA
AGGTACAACAAGTTCTCGGAGGACAGCGACAGTGACGAGGATGATGTATTCACTCTCTA
AATAACATGTATCCACAATTTGCTCTAATCTCGATACGTGTACCGTGTCTCACGTGTTT
CCACTTTTGATAAACTGATTATTCTG

B.

MARLVLLLALFTLAVASVHRRTFHQPRRYVKSVSLSRQPTLRERLLGTGSWEDYQKQRY
HYQKKLLAKYAANKASKLQSTNEIDELLRNYMDAQYFGTIQIGTPAQNFTVIFDTGSSN
LWVPSRKCPFYDIACMLHHRYDSGASSTYKEDGRKMAIQYGTGSMKGFISKDNVCIAGI
CAVEQPFAEATSEPGLTFIAAKFDGILGMAFPEISVLGVPPVFHTFIEQKKVPSPVFAF
WLNRNPDSELGGEITLGGMDPRRYVEPITWTPVTRRGYWQFKMDKVQGGSTSIACPNGC
QAIADTGTSLIAGPKAQVEAIQKFIGAEPLMKGEYMIPCDKVPSLPELSFVIEGRTFIL
KGEDYVLTVKAGGKSICLSGFMGMDFPERIGELWILGDVFIGKYYTVFDIGQARLGFAQ
AKSEDGYPVGPAVRRYNKFSEDSDSDEDDVFTL*

A

GGTACTGCAGGGTTTAATTACCCAAGTTTGAGGAGCATGCCATACCTCGCATT
CATTGTCGCACTACTAGCCTGCACTGTTATGTCTGGTCACGGTCAAATGACGG
GTGGATTAACGAAGCAGGACCCCAATGATCCTGAGCACATGGCGAGAGCATG
GAAGGCGGCGAAAGGTATCAATGAGGATGCATCCAACGCTGGACCGTACCA
CATGATTCCCATTAAGATTGTCAAGGCTGAATCTCAAGTCGTGGCTGGGGTTA
GATACATATTTGAAGTATTGTTCGGCGAATCAACATGTAAGAAAGGACATAT
GGCTGCAACAGAGCTTTCTGCCTCCAACTGTGAACTAAAAGAAGGAGGAAAC
CGAGCTCTGTATAAAGTGGAGCTCTGGGAGAAGCCATGGGAGAACTTTGAGC
AGTTCAATGTTGAGAAGATCCGAAATGTTGCTGCTGGCGAGCAAATCTAACC
TGCTTCTTTAAGACACCTCACTGAATATTGAATATTTTGTATGTCATGTATAAT
ACGACGCGATTTTTTTTATCTCACGTACTTTTTTCACTGTGACAATTGCCTTCT
CTGC

B

MPYLAFIVALLACTVMSGHGQMTGGLTKQDPNDPEHMARAWKAAKGINEDAS
NAGPYHMIPIKIVKAESQVVAGVRYIFEVLFGESTCKKGHMAATELSASNCELKE
GGNRALYKVELWEKPWENFEQFNVEKIRNVAAGEQI*

Figure 4

A.

GAAAAGCCTCCATAGTCATGCTCAAGCTCGTTGCACTCGTTTGCCTGGTTGCA
ATCTGCTTCGCTCAGGGACCACAAGGACCCCCTCCGTTCCTGCAAAGTGCTCC
AGCGGCTGTTCAACAAGACTTCGACAAGCTCTTCGTCAATGCTGGCTCCAAG
ACTGATGCAGAAATCGACAAAATGGTCCAAGATTGGGTTGGCAAACAAGATG
CATCCATCAAGACCGCATTCGATGCGTTCGTGAAGGAAGTGAAAGCCGCTCA
AGCGCAAGGTGAAGCTGCCCATCAGGCTGCTATCGCCAAGTTCAGCGCAGAG
GCCAAAGCGGCTGATGCCAAGCTGAGCGCAATTGCGAACGACAGGTCGAAG
ACAAACGCGCAAAAGGGAGCTGAGATCGACTCGGTACTCAAGGGACTTCCTC
CAAATGTCCGCACAGAGATCGAAAACGCCATGAAAGGATAAGAAGTCTCTAT
TTTGTATATATGAACCGATAAATATGCACAATAAAAAAAAAAAAAAAAAAA
AAAAAAAA

B.

MLKLVALVCLVAICFAQGPQGPPPFLQSAPAAVQQDFDKLFVNAGSKTDAEIDK
MVQDWVGKQDASIKTAFDAFVKEVKAAQAQGEAAHQAAIAKFSAEAKAADAK
LSAIANDRSKTNAQKGAEIDSVLKGLPPNVRTEIENAMKG*

A

GAAAGGTTTAATTACCCAAGTTTGAGGATGAAGATTGCCCTGGTTGTTCTGCTGTTAGT
CGCCTACGCAAATTCTGCGGACATCTTCAGAACTGAATTTGGAGCTAAAATAAAAGCAG
AGGCGGATAAAAGTAAGACGAAACTAAATATCTCCTCTCTTCTTCAAGTCCGTGGGAAA
TTCCTCAAGTTAAGACAACAGATCAAGGAGAGCTTAGCTCTGACCCCGGAACGAAAAGA
GTTGTTGCATAAGTTGATGCAGAAATTAGTACACATCAAAAAGGATCATGTTCATAAGG
GTGGTGACTCAATCGATGAAATCAATAAGAAGGTTGGAATGTCAGATCTGCTCTACGAT
GGTGATATGGTTCTAACGAAAGAGCAAGCCGAGGAAATGGTTAGCGATATCGACGGAAG
TGGAAGCAACCGTGCAAAGCGTCAAGCGTATCGTAACAAACTTTATCCGAAAACACTTT
GGACCGATGGAGTTATCTATTATTTCCATCCTAGTGCAACGAATAGCATGCGAAGTGTG
TTCCTGAAAGCAGCAAAAGAATGGAGCTCTCAAACGTGTATCGATTTCCATGAGGATGT
GGTTGGAATGGGCCCAAACAGGATCAAGGTTTTCAAAGAGAAAGGTTGTTGGTCGATGG
TTGGACGACTCCCTCGTCCACAGGAGCTTTCGTTGGGAAGAGGATGTGATACGATTGCC
ACAGCACAACACGAGATCGGCCATGCGCTGGGATTCTTCCACCAGCAGGCTAGACACGA
TCGCGATGACTACATTGTATTTAATTCAGAGAATGTAGTGCCGCGATATCTGGATCAAT
TCAAGAAACAGAGCAAAGAAACAAACGATAATTACGGATTAACTTATGATTACGGAAGC
ACCATGCAGTACGGATCGACCAGCGGATCCCAAAATGGAAAACCTACAATGGTGCCAAA
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CAATAAATACGCACTACAAATGTCTTGAGAAATGCGATAATAATGGGGCACAATGCAAA
ATGGGTGGATTCCCTAATCCAAGAGATTGCTCAAAATGCATTTGTCCCAGTGGATACGG
TGGCGCTACATGTGACCAGAAACCTGAAGGATGTGGTGAAGTACTTGAAGCAACGAAGG
AGGCTAAAACCCTCAAAAGTGAAATTGGAGATAAAAGTGCAGGAGATGAGGACAGAGAG
GACATGACCAAGTGTTACTATTGGATCAAGGCACCGGAAGGATCGAAAGTTGAGGTTAA
GATCGTAAACCTAGCTAAAGGTCTTGCCATTGATGGATGCAGATATTGGGGTGTGGAAA
TTAAAACTCAGGAGGATCAACGTGCTTCCGGATACAGATTCTGCGCTCCCGAAGATGCT
GGCGTCACTTTGGAGTCGCACTCGAATATTGTCCCTATAATAGCGTTCAATAGACACGG
CTCTACTGAATTTGAATTACAGTACCGAATCGTATAATTCTGCGTGACCAACGCTTCTC
CTAAGAGACGAGAAAGTTCTGCAACAATACTTTATTCATGTATAACAATATAGGAGAGT
TTTTCTTAGTAGAAGTACTTTCTTTGTTGGTTCTCCAGAAATAAACGATTTCCATGCAA
AAAAAAAAAAAAAAAAAAAA

B

MKIALVVLLLVAYANSADIFRTEFGAKIKAEADKSKTKLNISSLLQVRGKFLKLRQQIK
ESLALTPERKELLHKLMQKLVHIKKDHVHKGGDSIDEINKKVGMSDLLYDGDMVLTKEQ
AEEMVSDIDGSGSNRAKRQAYRNKLYPKTLWTDGVIYYFHPSATNSMRSVFLKAAKEWS
SQTCIDFHEDVVGMGPNRIKVFKEKGCWSMVGRLPRPQELSLGRGCDTIATAQHEIGHA
LGFFHQQARHDRDDYIVFNSENVVPRYLDQFKKQSKETNDNYGLTYDYGSTMQYGSTSG
SQNGKPTMVPKDPKYIETLGSPFIAFYDLLAINTHYKCLEKCDNNGAQCKMGGFPNPRD
CSKCICPSGYGGATCDQKPEGCGEVLEATKEAKTLKSEIGDKSAGDEDREDMTKCYYWI
KAPEGSKVEVKIVNLAKGLAIDGCRYWGVEIKTQEDQRASGYRFCAPEDAGVTLESHSN
IVPIIAFNRHGSTEFELQYRIV*

Figure 2G

A

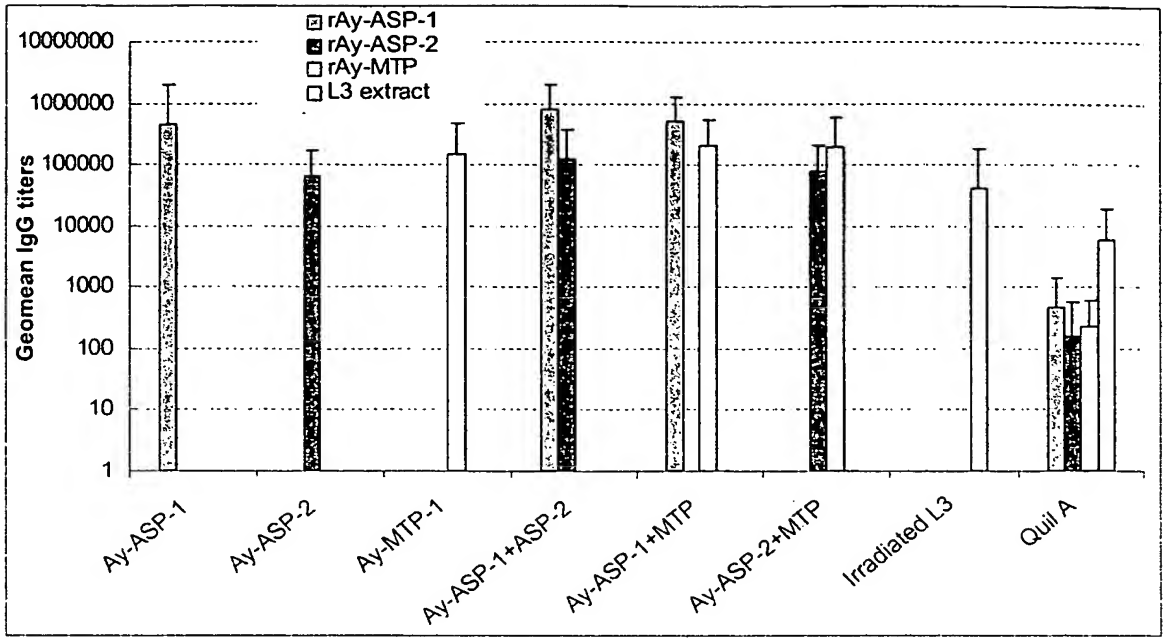
ACTTCAAGCGATGTTCCGTCCTGCTACTGCCGTCCTTCTATTGTTGGCCGCGTCCAGCA
CATTTGCTGGATTTTTCGATGATGTTGGAGGCTTACCCAGTGGTGTGGGAGATTTTTTC
ACAAAGCAGTTCAACAATGTGAAGGATCTTTTTGCTAAAGATCAAGATACTCTTGAGAA
GAATATCAATCTGGTAAAGGATCTATTGATTGCCATTAAGGAGAAGGCTAAGATGCTGG
AACCGATGGCCAACGAGGCTCAGAAGAAGACATTAGGGCAGGTGGACAACTATCTCAAT
GAAGTTCAACAGTTCGGCGATCAGGTAGCCAAGGAGGGTTCTACGAAATTTGAGGAGAA
CAAAGGGAAATGGCAGCAAATGTTGAACGATATCTTCGAGAAAGGTGGACTGGACAGCG
TGATGAAGTTGCTCAATCTGAAGTCCGGCGGTCGCTGCACGTTAGCCGCTGCACTCGTC
GCTCCCGTTGTGCTCGCGCTCATCCGCTAATTCACTTCTACCGCCGCCGACTACTGTAG
TTTACCCTGTGCCTGTGTGTGATATGTGGATTTGTGCATGATGTGTATCTATGATTTGT
GATTTATTTTTCTCTTGTACTTCCATGAATTCAGCTCTGGTATTCTGAGACGGACCAAC
ATCTCCGCAGTACTTTTTTGTATTGTTATCATCACCGTAATCCTGTGACTGGCGTAAAA
TGTTTAGTTTTCCGATAAAATACATTTCGAAAAAAAAAAAAAAAAAAAaa

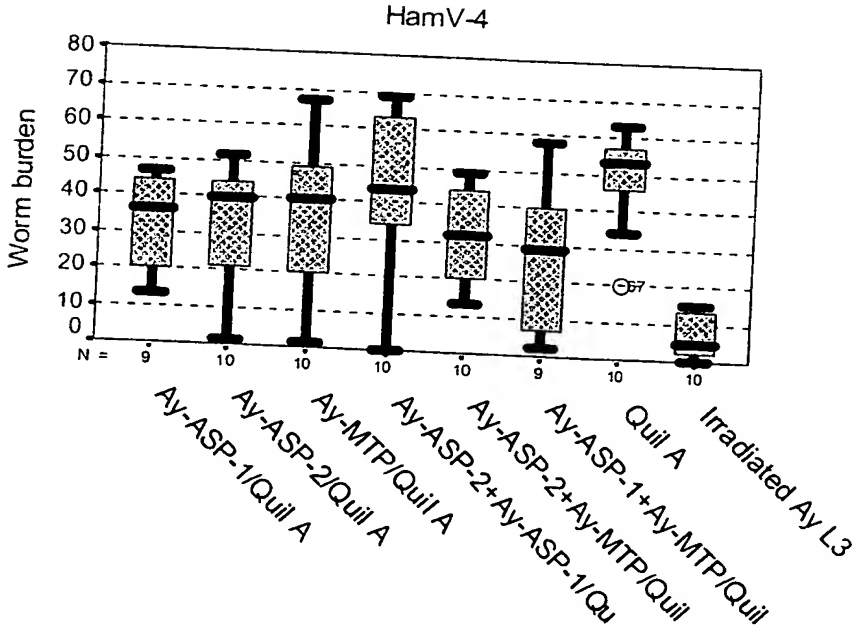
B

MFRPATAVLLLLAASSTFAGFFDDVGGLPSGVGDFFTKQFNNVKDLFAKDQDTLEKNIN
LVKDLLIAIKEKAKMLEPMANEAQKKTLGQVDNYLNEVQQFGDQVAKEGSTKFEENKGK
WQQMLNDIFEKGGLDSVMKLLNLKSGGRCTLAAALVAPVVLALIR*

Figure 29

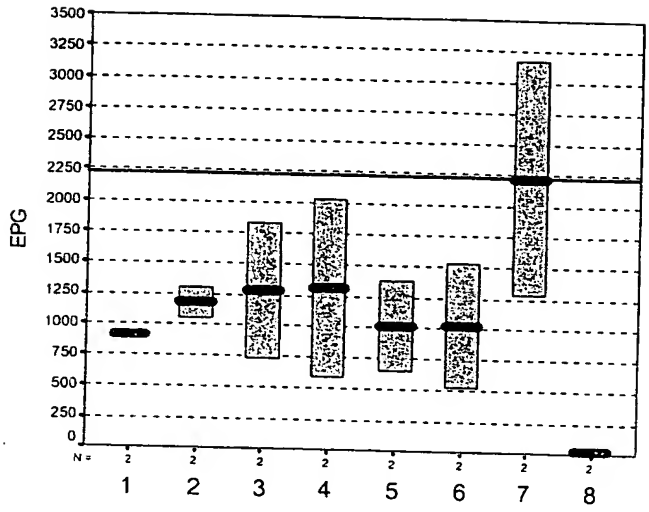
A


rAy-ASP-1
rAy-ASP-2
rAy-MTP
L3 extract
Geomean IgG titers
10000000
1000000
100000
10000
1000
100
10
1
Ay-ASP-1
Ay-ASP-2
Ay-MTP-1
Ay-ASP-1+ASP-2
Ay-ASP-1+MTP
Ay-ASP-2+MTP
Irradiated L3
Quil A


HamV-4
Worm burden
80
70
60
50
40
30
20
10
0
N =
9
10
10
10
10
9
10
10
Ay-ASP-1/Quil A
Ay-ASP-2/Quil A
Ay-MTP/Quil A
Ay-ASP-2+Ay-ASP-1/Qu
Ay-ASP-2+Ay-MTP/Quil
Ay-ASP-1+Ay-MTP/Quil
Quil A
Irradiated Ay L3

EPG per group

(average of two cages per group of 10 hamsters)



Groups

1. **Ay-ASP-1/Quil A**
2. **Ay-ASP-2/Quil A**
3. **Ay-MTP/Quil A**
4. **Ay-ASP-2 + Ay-ASP-1 /Quil A**
5. **Ay-ASP-2 + Ay-MTP /Quil A**
6. **Ay-ASP-1 + Ay-MTP /Quil A***
7. **Quil A (Adjuvant only control)**
8. **Irradiated Ay L3 (Positive control)**

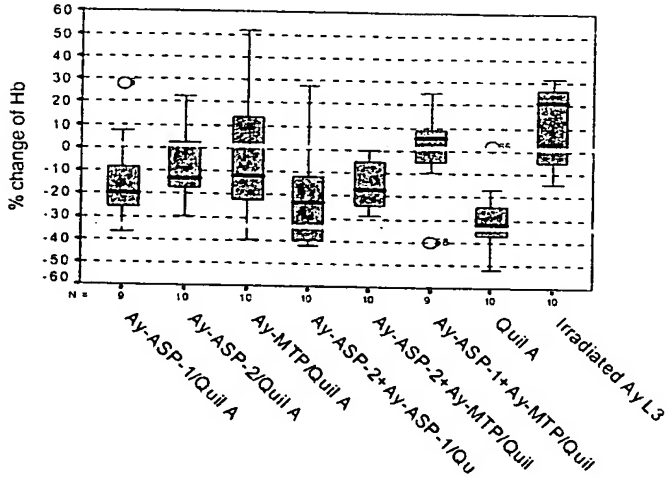
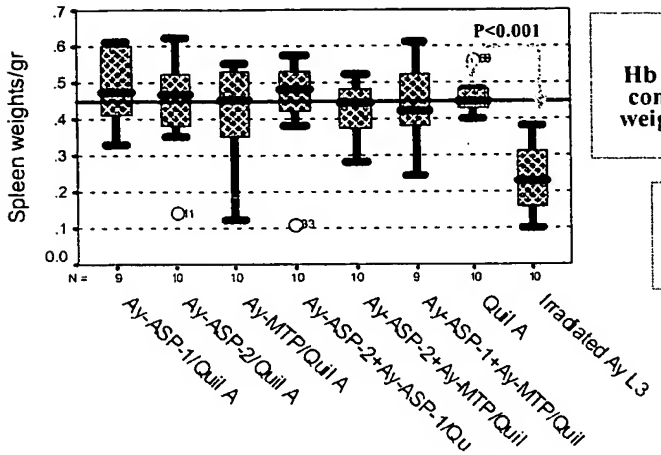


Fig. 24

A



Correlation

Hb and spleen weight controlling for body weights of hamsters at necropsy

$r = -0.72$

$P < 0.001$

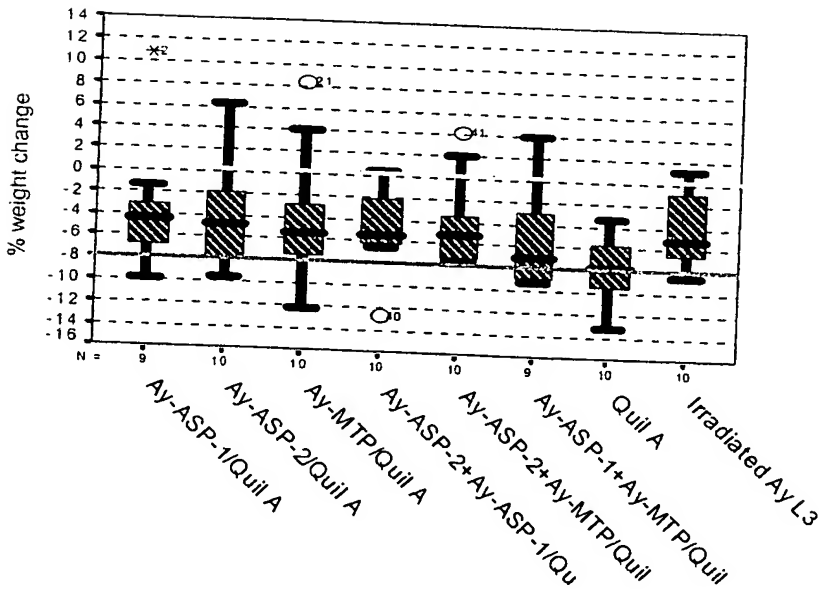
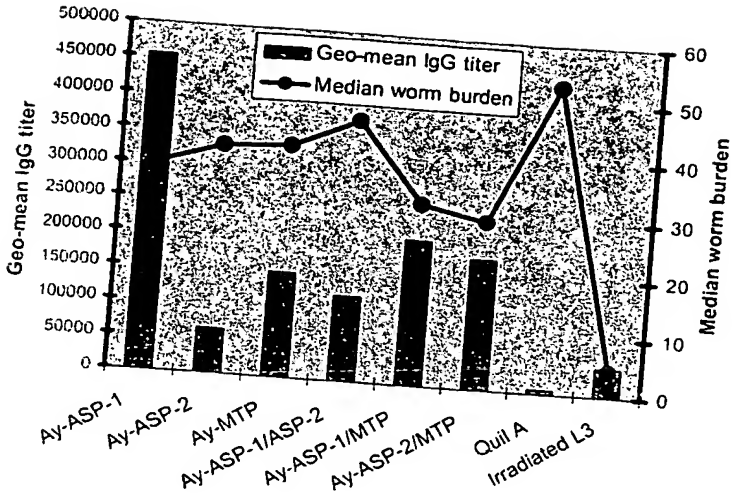
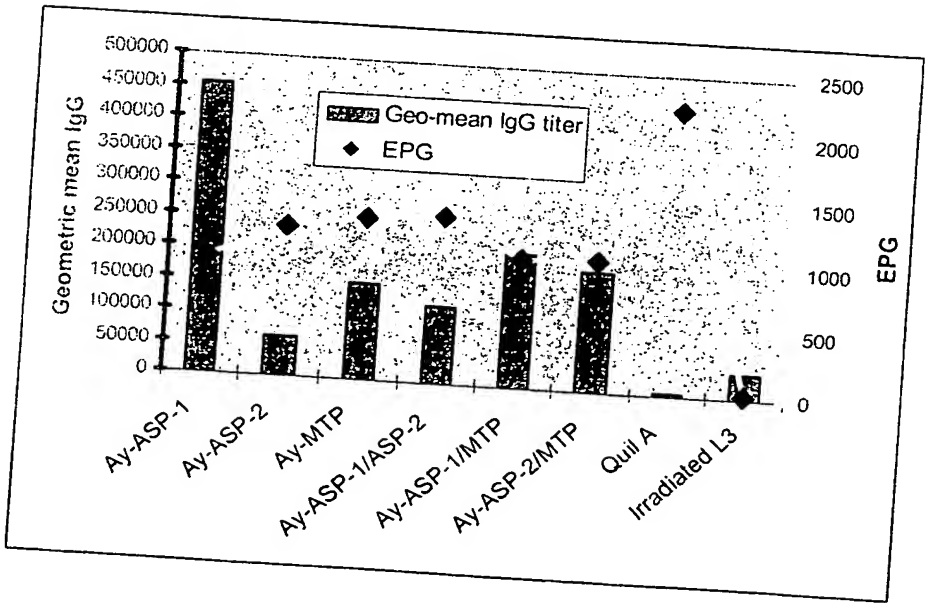


Figure 20

A


Geo-mean IgG titer
Median worm burden
Geo-mean IgG titer
Median worm burden
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
60
50
40
30
20
10
0
Ay-ASP-1
Ay-ASP-2
Ay-MTP
Ay-ASP-1/ASP-2
Ay-ASP-1/MTP
Ay-ASP-2/MTP
Quil A
Irradiated L3

B


Geo-mean IgG titer
EPG
Geometric mean IgG
EPG
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
2500
2000
1500
1000
500
0
Ay-ASP-1
Ay-ASP-2
Ay-MTP
Ay-ASP-1/ASP-2
Ay-ASP-1/MTP
Ay-ASP-2/MTP
Quil A
Irradiated L3